MARCH 20, 1961

PAPER TRADE JOURNAL

How Thurso Expanded and Improved Market Pulp Capabilities

Wire Life — Effects of Speed, Vacuum, Wire Length, Cover Material

Why Nap is Important In Selection of Felt Finish

Starting a New Series! Materials Handling for P&P Mills

Contents of the Week, pages 4-5

Editorial Dept.
University Microfilms, Inc.
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Ann Arbor, Mich.

CUSTOM DESIGNED UPRIGHT REELS

THE MOORE & WHITE CO.

330 East Hunting Park Avenue, Philadelphia 24, Pennsylvania

West Coast: Stephen Thurlow Co., 1912 Minor Avenue, Seattle, Washington

Control slime the new, effective, low-cost way

Just this much C2® slimicide for a ton of pulp!

- Newsprint
- Unbleached, semi-bleached and bleached kraft
- Food and paper board
- Printing and book papers

EFFECTIVE. Extensive mill use proves conclusively that C2, the new Mathieson slimicide, is the most effective product for acidic white water systems. Only ¾ pound of C2 per ton of pulp (often even less) is a common dosage rate for rapid, sustained control. Actual cost per ton: about 10-20¢. Resultant action: continuous generation of chlorine dioxide throughout the white water system . . . a distinct advantage over other slimicides which function only near point of application.

Other C2 advantages: no foaming at the head box . . . will not darken pulp . . . will not affect dyes at recommended dosage rates.

EASY-TO-USE. C2 is readily soluble in water and is non-corrosive to equipment.

C2 is shipped in highly-soluble, dry-flake form in quantities from one-pound samples to 100-pound drums in truckloads and carloads. Also, 50% solution is supplied in tank cars and trucks.

FDA CLEARANCE. C2 is our trademark for sodium chlorite. The Food And Drug Administration has expressed the opinion that this chemical is not a food additive when used as a slimicide as it cannot reasonably be expected to become a component of food through this use.

See C2 work in your mill—call for a demonstration.

Olin Mathieson

C2® is a trademark.

Chemicals Division, Baltimore 3, Maryland

8922

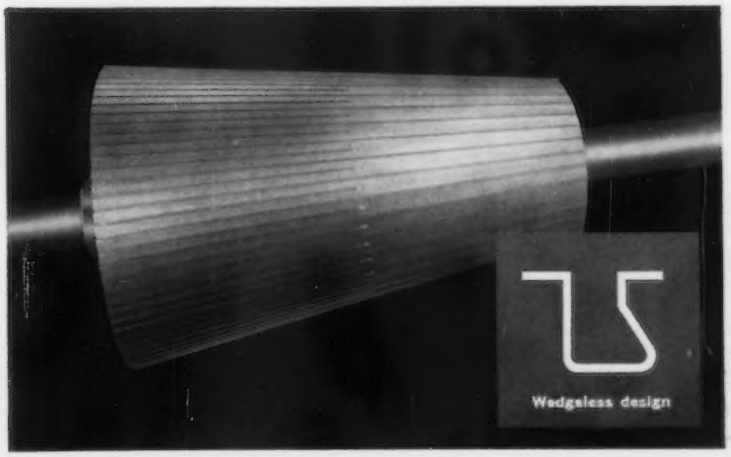
ONLY EMERSON WEDGELESS PLUGS CAN PASS THIS TEST

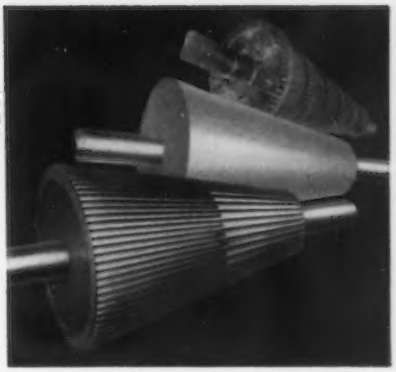
- because only Emerson Plugs have these design advantages!

Before You Buy Another Jordan Plug
Check the Answers to these Questions

Question	Emerson Wedgeless Plugs	Other Plugs
Are plugs available in stainless steel?	YES	NO
Are plugs easy to strip and fill because of bandless construction and only one knife to a slot?	YES	NO
Can a full range of knives — both single and duplex — be used interchangeably in the same plug?	YES	NO
Does the design provide impact cushions between the base of the knives and the bottom of the slots?	YES	NO
Is there ¾" of wear depth available on all knives for long periods of Jordaning?	YES	NO
Can used plugs be jacketed with stainless steel?	YES	NO
Do bars have the advantage of Microlyzing based upon 40 years experience in custom heat treating?	YES	NO

These exclusive features are found *only* in Emerson Wedgeless Plugs. In addition, the unique design of Emerson Plugs gives you precision milled, equally-spaced slots so that when the plug is filled, *all* stock gets thorough, uniform treatment over the entire plug surface. Metal-to-metal contact in the slots adds strength and supports the knives their entire length.





Hundreds of mills have gained the advantages of Wedgeless Plug design by having their used plugs jacketed with Stainless Steel through Emerson's patented process.

DURABILITY UNMATCHED

When it comes to wear resistance and durability, try matching the high tensile strength of materials used in Wedgeless Plugs with those of other plugs: Special Stainless Steel — 125,000; Fabricated Steel — 75,000; Cast Iron — 57,500. For additional plug strength, a hammered forged steel shaft is pressed into the Emerson plug body under 60-ton hydraulic pressure. No wonder Emerson Wedgeless Plugs are stronger — more durable and serviceable than any other plugs — and specified by more papermakers.

Over thirty years ago Emerson Wedgeless led the field in Jordan plug design. It still leads today. It has never been equalled. Use Emerson Wedgeless Plugs. Buy the best. Save money, time and trouble. You have a choice of cast or fabricated plugs . . . Stainless Steel Jacket on Cast Steel body . . . Stainless Steel Jacket mounted on your old plug. *And remember, of the hundreds of used plugs jacketed with stainless steel,* ***not one has ever failed in service.*** For full information, write.

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The Emerson Manufacturing Co.
Division of John W. Bolton & Sons, Inc.
Lawrence, Massachusetts

PAPER TRADE JOURNAL

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FEATURED THIS WEEK

Major Improvements Made in Woodhandling, Pulping and Drying at Thurso

Nearly new market pulp mill has just undergone improvement and expansion program to improve quality and raise output—Harry Dyer 22

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Because it saves Money, Time and Space!—Matthew W. Potts 28

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James R. Platt and Thomas M. Alexander 30

Factors in Wire Life and Suction Box Cover Wear

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This major consumer of waste paper states there is a future for this raw material if dealers take a positive attitude. He points out their serious lack in merchandising efforts such as salesmanship, market research or advertising—D. W. Bergstrom 35

SUBSCRIPTIONS

Mills, Converters and Personnel U.S., Canada, Mexico	1 yr. $5.00	2 yrs. $8.00	3 yrs. $10.00
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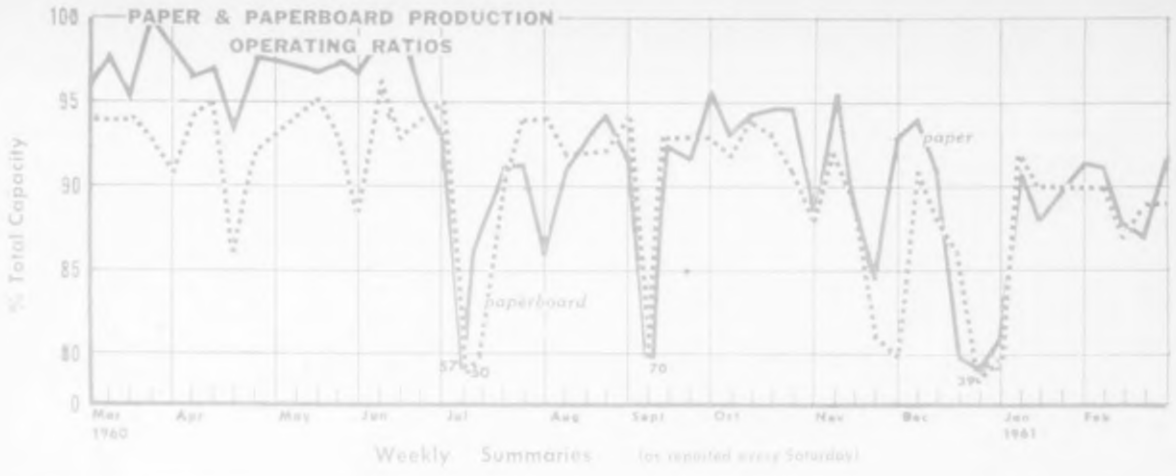

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REMEMBER THESE DATES

National Paper Trade Ass'n Annual Convention, Waldorf-Astoria Hotel, New York — **MARCH 26-29**

Technical Ass'n of the Pulp and Paper Industry, 12th Annual Coating Conference, Statler-Hilton, Buffalo, N. Y. — **MAY 8-10**

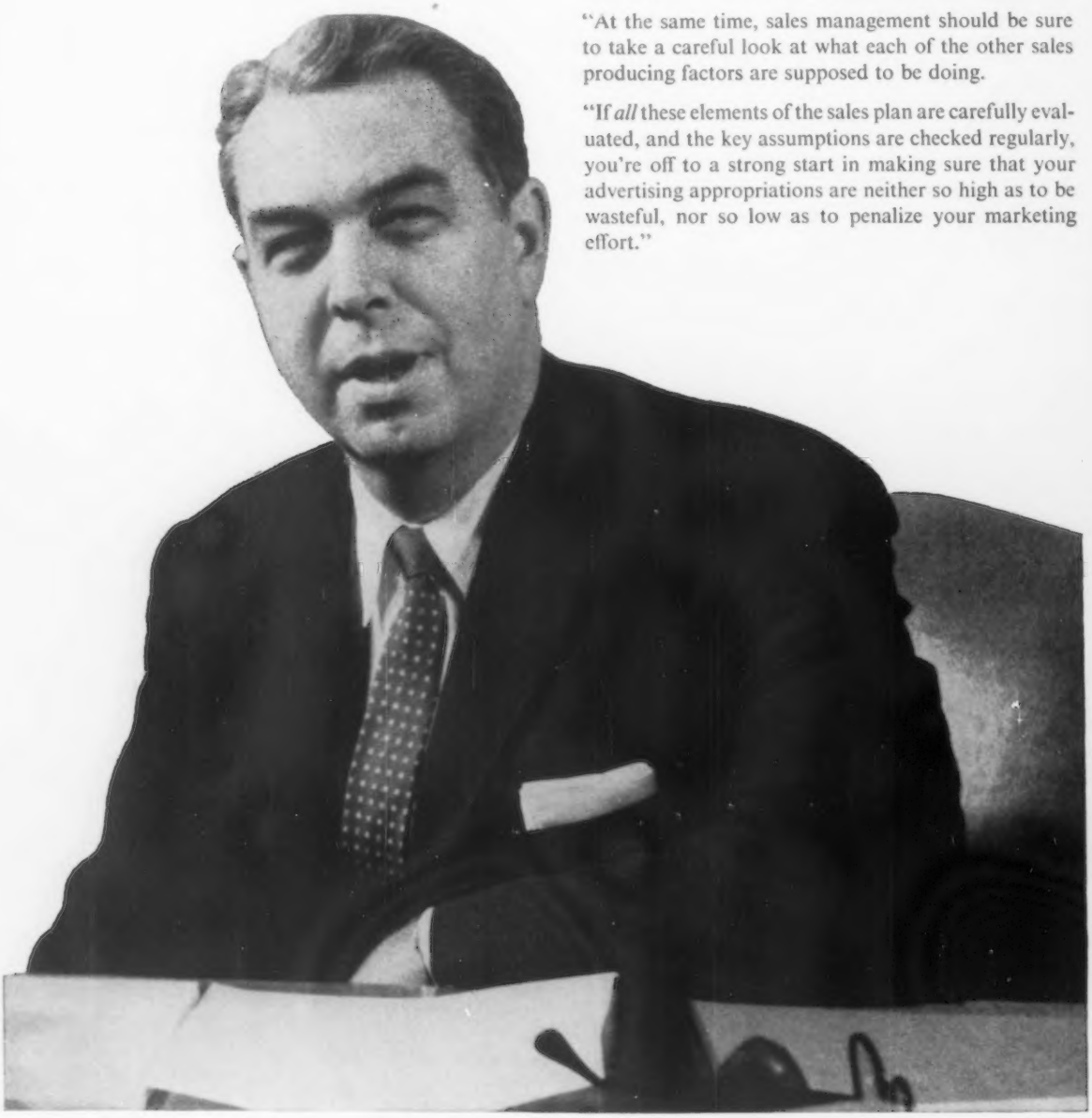
"How much is enough for advertising?"

JOHN R. SARGENT, partner in the nationally-known management consultant firm of Cresap, McCormick and Paget, points the way toward solution of one of top management's knottiest problems.

"Good sales management generally knows the crucial sales problems faced by each one of its products. Through good advertising advice plus experience, trial and error, and some judicious advertising testing, sales management also can come to have a good understanding of what advertising can and cannot do.

"At the same time, sales management should be sure to take a careful look at what each of the other sales producing factors are supposed to be doing.

"If *all* these elements of the sales plan are carefully evaluated, and the key assumptions are checked regularly, you're off to a strong start in making sure that your advertising appropriations are neither so high as to be wasteful, nor so low as to penalize your marketing effort."



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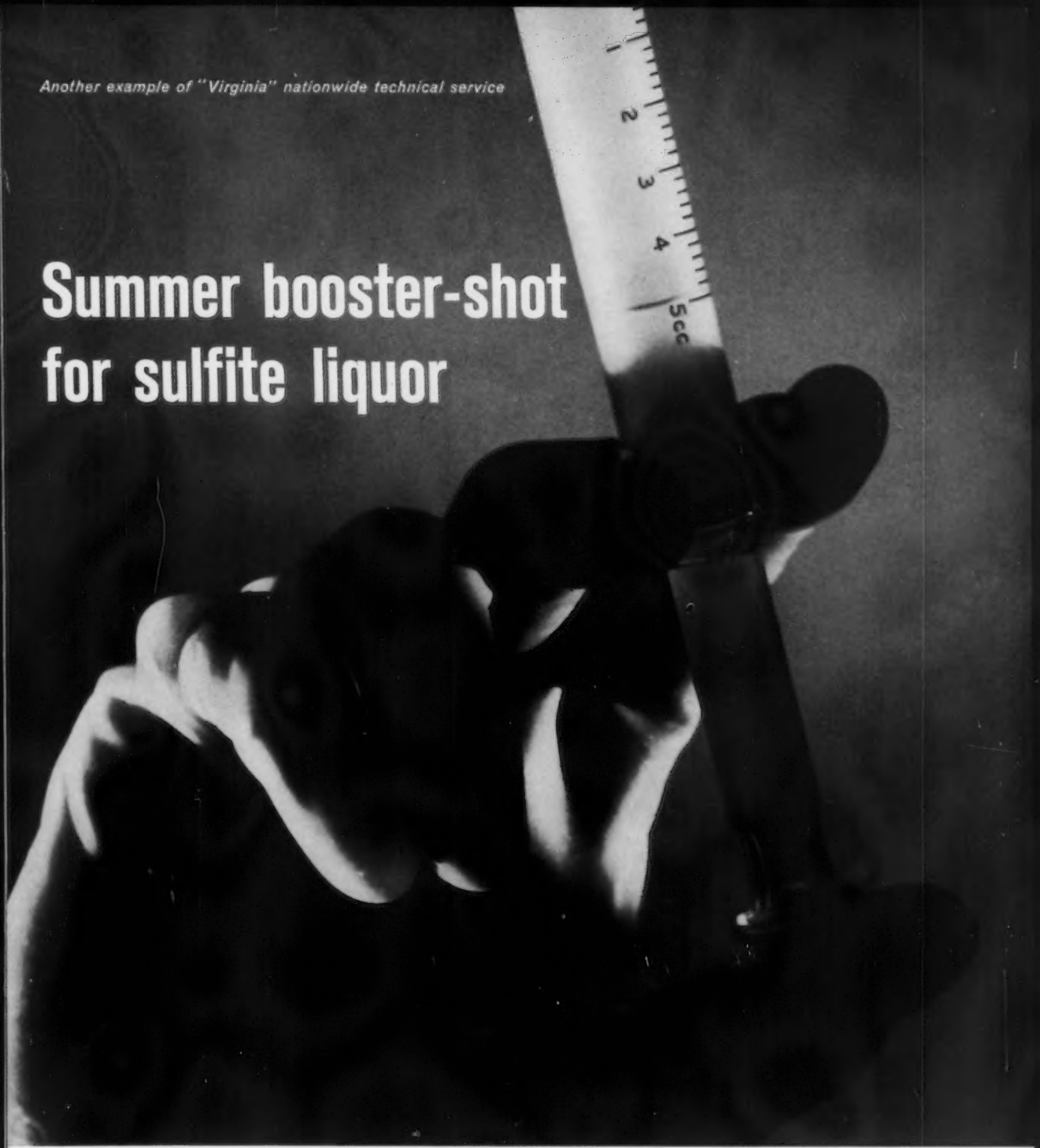
An organization of over 4000 members engaged in the advertising and marketing of industrial products, with local chapters in ALBANY, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CLEVELAND, COLUMBUS, DALLAS, DENVER, DETROIT, HAMILTON, ONT., HARTFORD, HOUSTON, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, MINNEAPOLIS, MONTREAL, QUE., NEWARK, NEW YORK, PHILADELPHIA, PHOENIX, PITTSBURGH, PORTLAND, ROCHESTER, ST. LOUIS, SAN FRANCISCO, TORONTO, ONT., TULSA, YOUNGSTOWN.



Another example of "Virginia" nationwide technical service

Summer booster-shot for sulfite liquor

A pulp mill was plagued year after year by an efficiency loss of about 30% in the sulfite acid-making plant caused by summer-warmed water. As a result, both pulping capacity and pulp quality dropped off. The mill people decided to try refortifying their sulfite cooking acid and ordered a tank car of Virginia SO_2 (99.9% pure). We sent a technical service man along. He found best results were obtained by adding liquid SO_2 to the sulfite acid storage tank through an open stainless steel pipe. Strength of the cooking acid was quickly raised to the required 6.5% level. Pleased with the results of this summer-time emergency treatment, the mill took a hard look at year-round variations in acid strength and pulp quality—now plans a permanent installation that will permit efficient use of liquid SO_2 as needed throughout the year. This will assure constant-strength sulfite liquor, a higher yield from the digesters, and a better end product. If your sulfite liquor needs a summer booster shot, write us for data. Industrial Division, VIRGINIA SMELTING COMPANY, Dept. 219, West Norfolk, Va.

VIRGINIA Chemicals

Field Offices: New York • Boston • Chicago • Atlanta
Asheville • Philadelphia • Akron • Seattle • Memphis

Available in Canada and many other countries

Another Mount Vernon Dryer Felt Success Story . . .

Mount Vernon was asked by a large Southern Kraft Mill how they could increase drying and dryer felt life expectancy on their #2 machine. WOODBERRY 403, a synthetic reinforced full faced asbestos dryer felt, was recommended and established a new record! WOODBERRY 403 ran 166 days as against the 127 day life run of the best of previous felts used. WOODBERRY 403 yielded an increase of 30%! This style continues to give outstanding service under the severest operating conditions and repeatedly renders gratifying results.

A RUGGED CHAMPION

WOODBERRY 403—Synthetically Reinforced Full-Faced Asbestos Felt

WOODBERRY 403 is a hot spot specialist designed to produce maximum drying efficiency and life in the toughest positions. The asbestos face of this dryer felt provides protection from the devastating high temperatures. The synthetic reinforcement adds strength and longer life by superior resistance to acids, abrasion and flex. The open construction back permits moisture to be driven off quickly, thus providing superior drying efficiency. This combination of advantages all adds up to reduced costs per ton of paper production. Strong, longer-lasting, economical WOODBERRY 403 is pre-stretched, pre-shrunk and fully heat stabilized.

MOUNT VERNON DRYER FELT FAMILY—WOODBERRY 403 is just one of Mount Vernon's full "family" of scientifically designed dryer felts. There's an individual felt for virtually every paper machine position and every paper-making need.

UNIFORMITY Makes The Big Difference

Mount Vernon Mills, inc.

A LEADER IN INDUSTRIAL TEXTILES

DRYER FELT DIVISION, 201 East Baltimore Street, Baltimore 2, Maryland • Telephone: SA 7-5845

Trends

Presenting More Accurate Economic Picture

Recent newspaper and radio headlines in their search for excitement with regard to unemployment have been misleading. Two factors were ignored or glossed over. First, the statement that unemployment stands at the highest point in 20 years is not very meaningful without some indication of the per cent in relation to the total work force. It is just as accurate to state that unemployment in February 1961 stood at the highest point in only two and one half years, since the percentage of unemployed in February was 6.8% compared with 7.5% in August 1958. The second point is that a new record for the total number employed (up 200,000 over January) was set in February 1961, the trouble being that the number of new employables is growing faster than the economy's ability to absorb them. Of course, this is of no significance to the individual who is unemployed, but it is of significance in presenting an accurate picture of the economy. As we have said many times before, nothing will change a recession into a depression faster than to get every one, individuals and corporations, believing that it is going to happen.

Pulp Output Slightly Ahead

Wood pulp production in January ran 1% ahead of the same month last year. Domestic shipments of market pulp were off 5% but exports were up 17%. Exports compared with last January by areas were: Canada +6%, Latin America +108%, Europe +22% and to Asia, Africa and Pacific −24%.

Folding Boxes off in February

Shipments of folding cartons in February declined 9% in dollar volume and 8.9% in tonnage, states the Folding Paper Box Ass'n. Dollar volume of shipments for the first two months of this year lags 6.3% behind the like period of 1960 and tonnage is down 6.3%. Part of the difference is attributed to the extra working day in February 1960. It represents about 5% more production time than was available in February this year. New orders in February were off 8% from the same month last year.

New Series on Materials Handling

An important new series on materials handling starts in this issue. Covering all phases of materials handling for pulp and paper mills, from the woodyard to finishing and storage of paper, each article has been prepared by an expert in his field.

9 KEYS TO EFFICIENT PRESSURIZED REFINING
1. Parallel feed
2. Floating rotor shaft assembly
3. Twin refining surfaces
4. Compact, accessible automatic controls
5. Hydraulically controlled refining head
6. Easy access and minimum maintenance
7. Wide choice of plate designs
8. Choice of 26", 34" or 42" size with motors up to 1250 horsepower
9. Rugged, dependable construction
SPROUT-WALDRON

SPROUT-WALDRON PRESSURIZED REFINER

twice the normal capacity in a single unit

Those in the know were quick to choose THE NEW PRESSURIZED "SPROUTS"

Here is a different type stock preparation refiner designed for superior quality control, low operating costs and minimum maintenance. The parallel feed arrangement serves twin refining surfaces, giving twice the capacity of single disc units. Key to refining accuracy and dependability is the floating rotor shaft disc assembly which rotates between the fixed and hydraulically controlled movable heads. The flow of pulp is equally distributed between both sets of plates, assuring uniform refining and even plate wear. If you are looking for mechanical simplicity, high production and uniform quality, plus low operating and maintenance costs - - get the facts on the Sprout-Waldron 20", 26", 34" and 42" pressurized refiners. Bulletins available on request.

* Container Corporation of America
Consolidated Water Power & Paper Co.
Oji Paper Company, Ltd.
Kimberly-Clark Corporation
Tammerfors Linne-Och Jern-Manufaktur, A.-B.
Manchester Paper Board Co., div of Federal Paper Board Co.

* *over 13,000 connected horsepower*

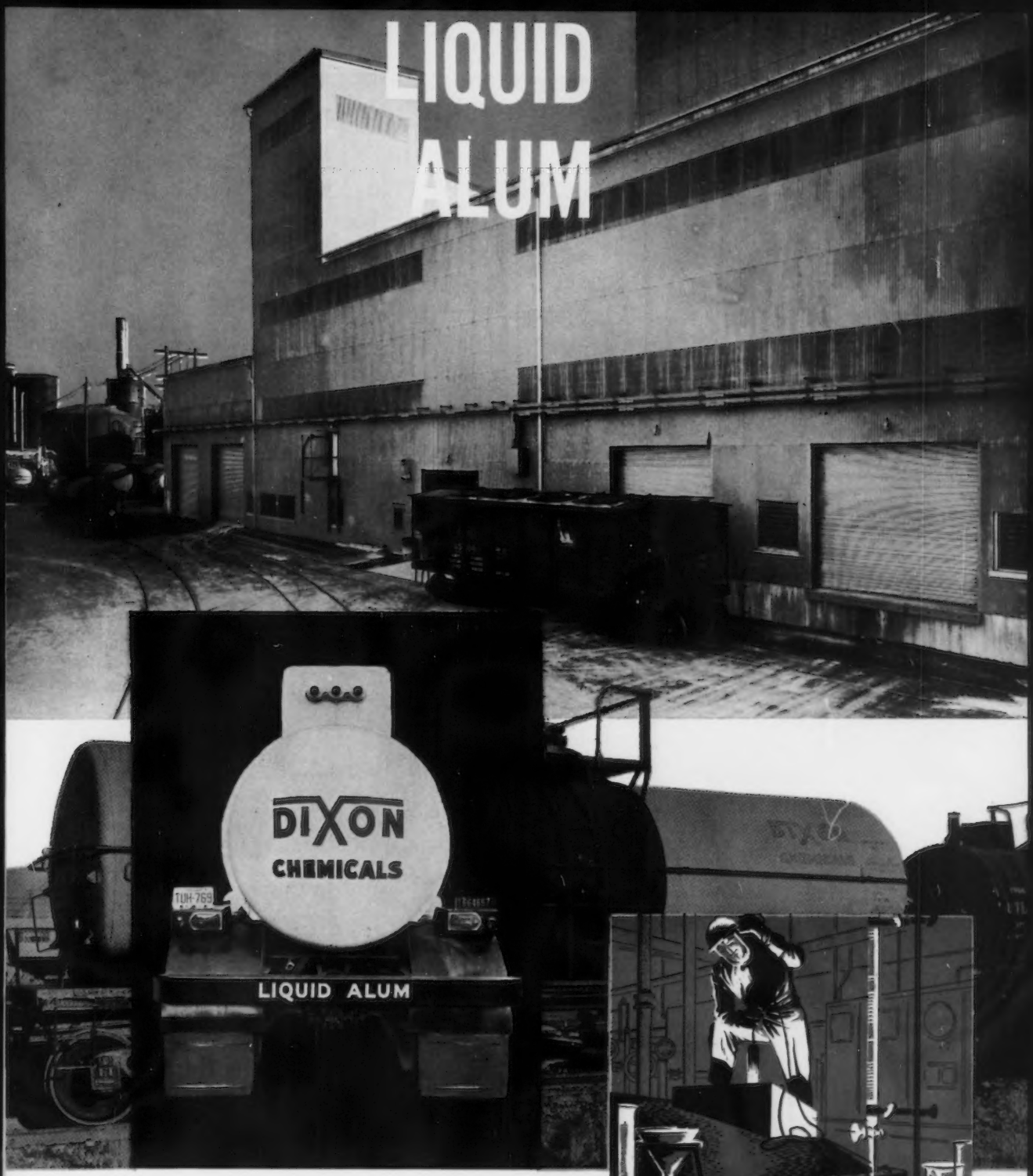
E/209

SPROUT, WALDRON & CO., INC.

MUNCY, PENNSYLVANIA, U. S. A.

SINCE 1866 REFINERS • CONVEYORS • FEEDERS • SCREENS • MIXERS • DRAINERS • FIBER PRESSES • STOCK PROPORTIONERS

LIQUID ALUM



Quality-controlled with modern equipment and techniques to give you the finest grade of aluminum sulfate to meet your strictest specifications.

Technically produced by highly skilled and thoroughly trained chemists and engineers to meet the exacting requirements of the water treating, paper, glass, rubber, printing, and other highly specialized industries.

Delivered promptly via tank truck or tank car in whatever quantity required.

Also available dry in bulk or bags.

DIXON
CHEMICALS

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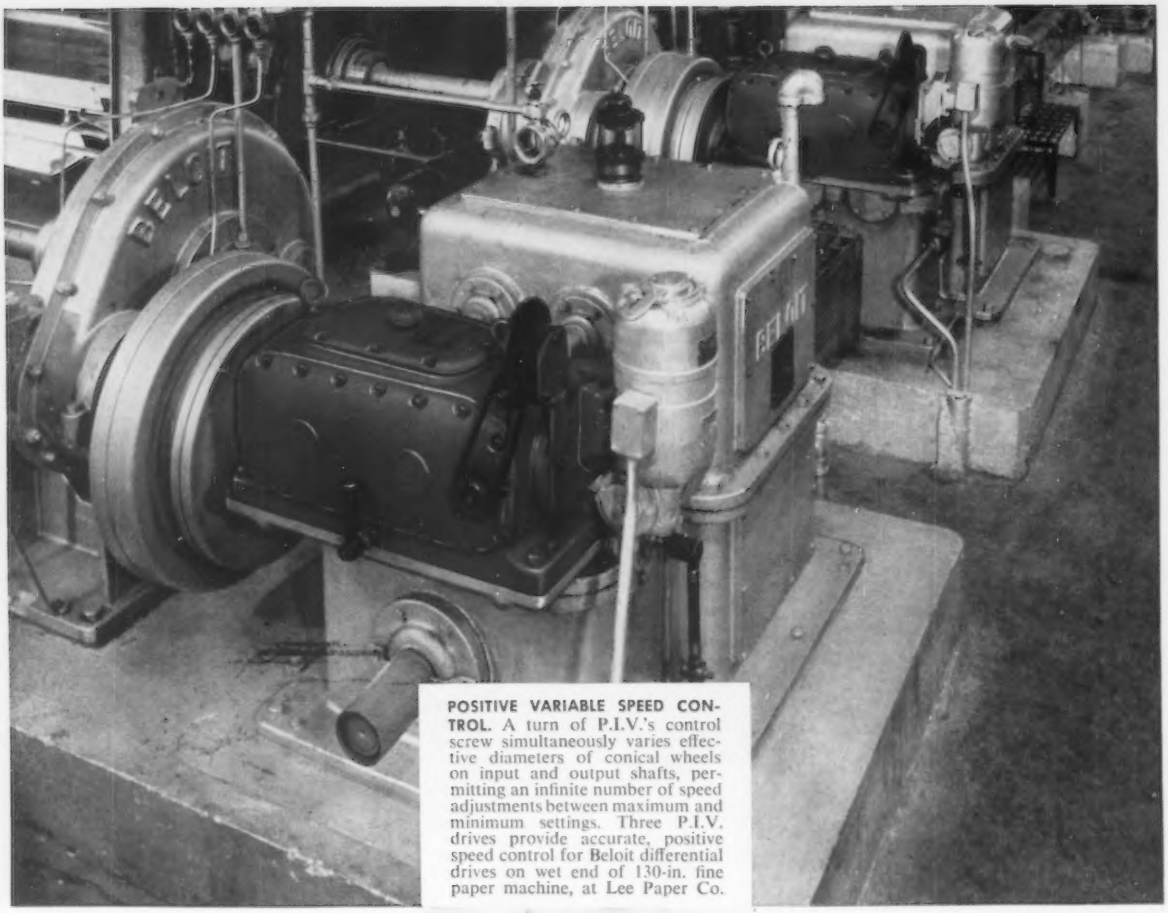
1260 BROAD STREET, BLOOMFIELD, N. J.
EDISON 8-4000

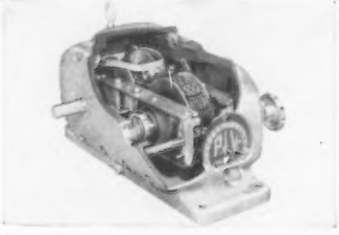
Sales Offices:

BLOOMFIELD, N. J. • PAULSBORO, N.
PROVIDENCE, R. I.



POSITIVE VARIABLE SPEED CONTROL. A turn of P.I.V.'s control screw simultaneously varies effective diameters of conical wheels on input and output shafts, permitting an infinite number of speed adjustments between maximum and minimum settings. Three P.I.V. drives provide accurate, positive speed control for Beloit differential drives on wet end of 130-in. fine paper machine, at Lee Paper Co.

Unique in operation . . .



unmatched in accuracy . . .

For stepless, slipless speed changing

. . . there's nothing like P.I.V.

Where operations requiring variable speed control can't tolerate slip—no other mechanical drive is equipped for the job like Link-Belt P.I.V. With its all-metal, self-tooth-forming chain that maintains positive grip with radially grooved wheels, it offers a degree of accuracy . . . a level of efficiency—unique in the field. Speeds can be varied in an instant, regardless of load, without interrupting the driven machine. And P.I.V.'s all-metal construction ignores atmospheric conditions.

The complete story is contained in Book 2274. Your nearest Link-Belt office or authorized stock-carrying distributor will supply a copy.

LINK-BELT P.I.V. VARIABLE SPEED DRIVES

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

PJT PAPER TRADE JOURNAL

WEEK OF MARCH 20, 1961

Fine Paper Rates Seen Off in 1961

Manufacturers of fine papers in the U.S.A., on an industry basis, are expected to operate at 90 per cent of capacity in 1961, compared with a 94 per cent capacity in 1960, according to George R. Wallace, 3rd, president of Fitchburg Paper Co.

New Bag Plant Announced by Bemis

Construction plans for a new 200,000 square foot plant at Houston, Tex., have been announced by Bemis Bro. Bag. The plant will manufacture paper, textile and open-mesh bags. Ground will be broken in late spring with full operation scheduled by the end of the year. Costs will approximate $1.4 million, not including machinery.

John C. W. Evans

Keeping abreast of current technological developments and trends in the European countries is the aim of Paper Trade Journal editor, John C. W. Evans. He leaves this week for a one and a half month tour of Europe.

Expansion program at Wisconsin River Division of Consolidated Water Power & Paper Co. includes a new service building being erected in Whiting, Wis. Shown is a sketch of the 214-foot-long, aluminum-sided structure which will accommodate stores, machine shop and turbine facilities. A portion of another building which will house a new coated paper machine is at left background. The new machine will increase the firm's paper capacity to over 300,000 tons. Drawing by Ed Laskowski of the company's engineering department.

$3.5 Million Expansion Set for I. P. Moss Point Mill

Work will begin within a matter of weeks on a $3.5 million expansion program at International Paper Co. in Moss Point, Miss., according to mill manager Harry A. Rogers. The program, which includes the addition of a 140,000 square foot paper products storage area and finishing room plus modernization of the mill's power plant, will create 200 permanent new jobs. The new space will be equipped to handle a new line of paper grades now in production.

The Moss Point mill has five paper and board machines including two Yankee fourdriniers, ranging in width from 107 inches to 218 inches, and providing total production of about 600 tons per day. Products of the mill include M. F. and M. G. semi-bleached kraft paper, bleached kraft paper and board, and machine coated bleached kraft board. Kraft pulp production amounts to 650 tons per day.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending March 4, 1961, at 91.5 per cent, compared with 87.8 per cent, revised, for the preceding week. The ratio was 97.1 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending March 4, 1961, at 89 per cent, compared with 89 per cent for the preceding week and 94 per cent for the corresponding week a year ago.

(Detailed Statistics on page 50)

J C W EVANS, EDITOR
49 WEST 45 PAPER TRADE JOURNAL NYK

NOTE CHANGE OF DATES FOR TAPPI 11TH CORRUGATED CONTAINERS CONFERENCE FROM SEPTEMBER 11-13, 1961 TO SEPTEMBER 6-8 1961 CONFERENCE HOTEL NOT CHANGED WOULD APPRECIATE EARLY PUBLICITY

H O TEEPLE TAPPI

PAPER PEOPLE

L. S. McGill

Columbia Cellulose Names Director, Administration

L. Stewart McGill has been appointed director of administration of Columbia Cellulose Co., Ltd. Since July 1959, he has been administrative assistant to the pulp mill manager at Celgar, Ltd., a subsidiary of Columbia Cellulose.

Prior to joining Columbia Cellulose in 1957 as manager of administration at the company's Prince Rupert mill, Mr. McGill had over 15 years of experience in the pulp and paper industry, largely in personnel and industrial relations work with Crown Zellerbach Canada, Ltd.

In his new post, Mr. McGill will be situated in the Vancouver office of the company.

St. Croix Paper Co. Announces Appointments

Appointment of William T. Gallagher as personnel director and Robert E. Jones to the post of staff-public relations has been announced by the St. Croix Paper Co. Both are newly created positions and both appointments are effective immediately.

Bishop Joins Ryegate Paper as Asst. Manager

The newly appointed assistant manager of the Ryegate Paper Co. in East Ryegate, is Robert Munn Bishop.

Mr. Bishop comes to the Ryegate Paper Co. from the Dryden Paper Co. in Dryden, Ontario, where he served as technical director.

Bulterman Joins Parsons Paper as Plant Engineer

Leo J. Bulterman has joined the Parsons Paper Division of the National Vulcanized Fibre Co. as plant engineer.

He has been associated with the National Vulcanized Fibre Co. in Wilmington, Del., as applications engineer since 1956.

Riordon Sales Corp. Names Two Vice Presidents

Appointment of Cecil E. MacDonald and Donald F. McCall as vice presidents of Riordan Sales Corp., Ltd., has been announced.

Riordan Sales Corp., a subsidiary of Canadian International Paper Co., is responsible for marketing the dissolving and paper pulps produced by that company and International Paper Co.

Mr. MacDonald, a graduate in chemical engineering from McGill University, joined Canadian International Paper Co. in the newsprint manufacturing department in 1946. He transferred to Riordan Sales Corp. in 1958.

Mr. McCall, a graduate of Dartmouth, after several years executive experience in the pulp and paper industry both in the East and on the West Coast, joined International Paper Co. in May 1960.

WP&P Advances Two At Paperboard Products

Two promotions at Paperboard Products Division of Consolidated Water Power & Paper Co. have been announced.

Herbert C. Nicholls has been appointed product manager, corrugated containers, and Eugene Van Slambrouck, product manager, folding cartons. In these new positions both men will be responsible for merchandising the product lines they manage and will work under the direction of John Z. Segal, assistant general manager, who heads the division's sales program.

Mr. Nicholls joined the company in 1954 in product design and has been serving as product development supervisor in corrugated containers. A graduate of Michigan State College, he was formerly employed by U. S. Forest Products Laboratory.

Mr. Van Slambrouck began work at Paperboard Products in 1957 in products design and has been product development supervisor in folding cartons.

L. S. Pearson

Pearson Resigns Southworth Post

Leslie S. Pearson has resigned as vice president of the Southworth Machine Co., Portland, Me., to devote his time to consulting commitments in this country and Europe, for specialized development of advanced paper mill finishing programs. Mr. Pearson's offices will be in Portland, Me., at 731 Brighton Avenue.

Cady Made Technical Mgr., Paper at U. S. Gypsum

Norbourne W. Cady, United States Gypsum Co., has been appointed technical manager, paper.

A graduate of the University of Missouri, Mr. Cady joined United States Gypsum in 1943 at Chicago as production engineer, paper. He transferred to the company's Oakmont, Pa., plant as works manager in 1944, and returned to Chicago in 1949 in the post of production manager, paper.

Crown Zellerbach Shifts Jacoby to San Francisco

Walter C. Jacoby, supervisor of product quality and development at the Crown Zellerbach Corp., Camas, Wash., mill division, has been promoted to product manager of special papers for the corporation's manufacturing division.

In his new post he will be located in the headquarters office in San Francisco. The appointment is effective May 1.

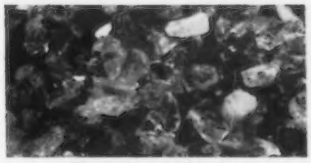
what happens when you CENTRIFFLE your stock?

1. You keep junk and dirt like this out of your *paper*. It's caught and removed right at the pulpers, before it can get broken up into fine dirt and cause rejects and breaks.

2. You keep junk and dirt like this out of your papermaking *equipment*, before it eats into Jordans, refiners, pumps, screens, wires, felts, rolls and cutters.

Either way — *both* ways — you've got yourself a mighty profitable investment when you install

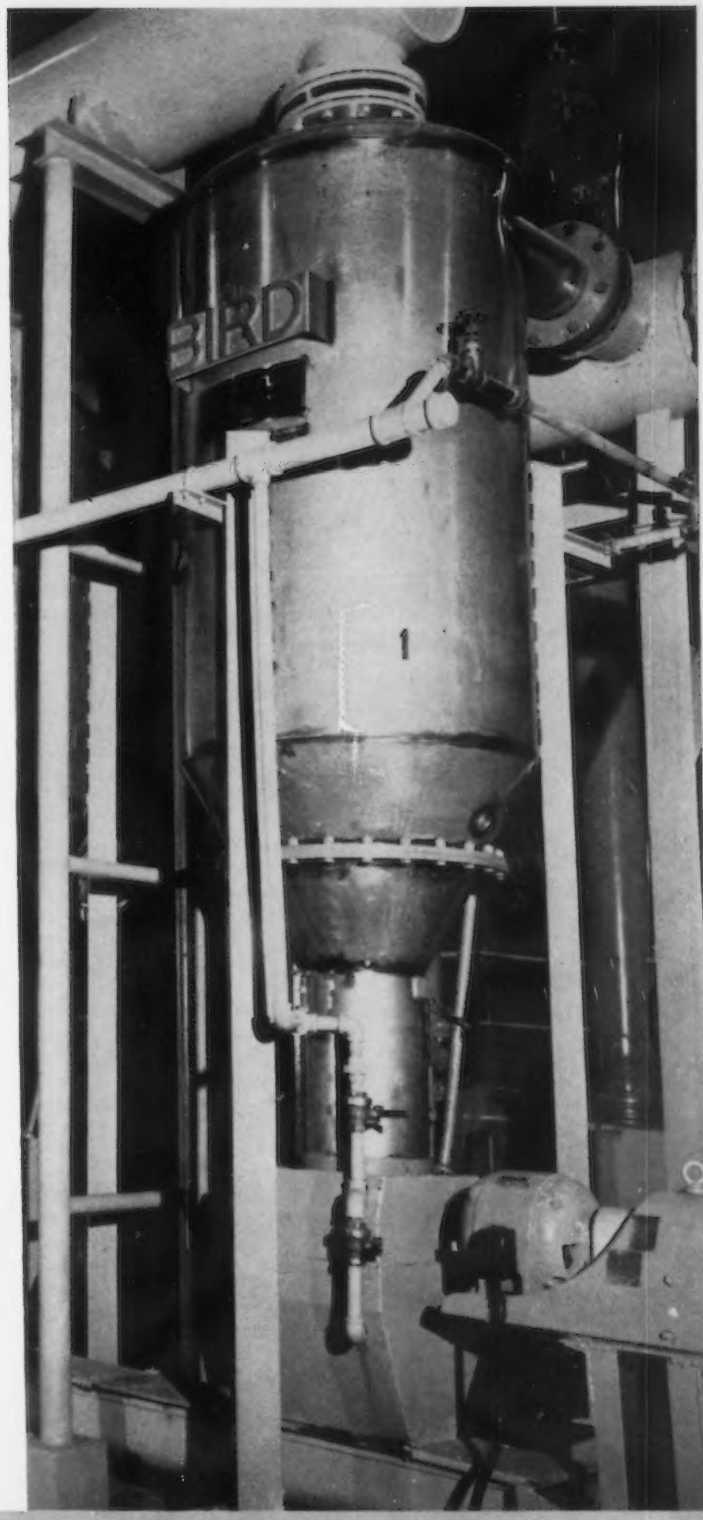
BIRD CENTRIFFLERS



Glass from kraft waste

Metal, wood, rubber, stone, sand

Just plain dirt — fine and coarse



BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND 4, OREGON • ATLANTA 9, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

Don't Give an Inch — to FOAM

use Dow Corning Silicone Defoamers*

There's a *right* tool for every job. In foam control it's Dow Corning silicone antifoamers or defoamers . . . job-proved thousands of times over as the most efficient, most economical, and most versatile foam suppressors available.

*At prescribed levels, are sanctioned by FDA

FREE SAMPLE
and new manual on foam control

first in silicones
Dow Corning
CORPORATION
MIDLAND, MICHIGAN
Dept. 9715

Please rush a FREE SAMPLE of a Dow Corning silicone defoamer for my product or process, which is (indicate if food, aqueous, oil or other): _____

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

PJT NEWS OF CONVERTERS

Finishing Building Added To APCO Facilities

A new, modern finishing building which houses trimming and packaging operations has recently been completed by The Appleton Coated Paper Co., Appleton, Wis. One wall of the 100- by 200-foot building which faces the north is made entirely of glass block to benefit from the values of diffused, natural light. One-hundred-foot candles of fluorescent lighting augment the natural lighting. The finishing room office is connected with the entire mill by Lamson pneumatic tube system for expediting orders.

Automation is the keynote of all materials handling equipment. Four trimmers are installed with up to 105-inch knife trim and hydraulic skid lifts allow sliding of paper onto air float tables where papers are automatically fed to back of trimmers. Air float tables (of trimmer table height) convey paper from trimmers to packing and sealing stations and hydraulic lifts built into the floor are used for stacking finished cartons of coated papers.

Facilities located in the ceiling of the new finishing room carefully regulate the humidity and temperature in the adjoining sorting department where conventional windows have been replaced with glass blocks. The glass block windows diffuse the natural north light for ease in sorting and to allow better control of inside temperature. Automatic doors between the calender room, sorting room and finishing room help to maintain constant temperature and humidity for improved quality control.

Lord Baltimore Press Elects Langlois V-P

George R. Langlois, president of the Muirson Label Co. of San Jose, Calif., has been elected vice president of the Lord Baltimore Press, Baltimore, Md.

Muirson is an affiliate of Lord Baltimore Press. The new vice president will continue to make his headquarters in California, where the Baltimore-based firm has a branch.

Sloan Named Rap-In-Wax Sales Vice President

Rap-In-Wax Co., Minneapolis based flexible packaging firm, has appointed Arthur E. Sloan to the new post of vice president, sales.

Mr. Sloan joined Rap-in-Wax in 1952 as product manager in charge of extrusions, laminations and Government Barrier Sales. He later was appointed sales manager of the company's Industrial Packaging Division. In 1959 he became general sales manager.

Shikoski Steps Up At KVP Sutherland

Appointment of Howard Shikoski as acting general manager of the KVP Sutherland Paper Co.'s Sutherland Division's Albany, Ga., plant has been announced. Mr. Shikoski fills the post vacated by the resignation of R. S. Breckenridge.

Starting with Sutherland's Kalamazoo operations in 1950, Mr. Shikoski was a plant supervisor and department head before his appointment to the post of specialties supervisor for the Albany plant in 1958.

Specialty Papers Expands Into Extrusion Coating

Expansion of the Specialty Papers Co. into the field of extrusion coatings of polyethylene, polypropylene and nylon for its packaging program has been announced by William P. Patterson, president.

A Waldron-Hartig extruder, coater and laminator is being installed at the company's principal manufacturing plant and will go into full operation sometime next month.

Appointment of Alexander B. Beal, former manager of the New Jersey plant of the Lassiter Division of the Riegel Paper Corp., to head the extrusion coating division was also announced.

Specialty Paper is a converter of flexible packaging materials and produces rotogravure-printed waxed paper, labels, laminated aluminum foils and cellophane.

exceptional moisture and grease resistance

POLYETHYLENE-COATED KRAFT OPENS UP NEW OPPORTUNITIES FOR CORRUGATED BOARD

Polyethylene-coated corrugated board — produced on conventional corrugating equipment — is extending the usefulness of corrugated into many new packaging applications.

This unique container board has exceptional moisture and grease resistance and a glossy, non-abrasive liner surface that will not scratch or mar package contents.

Extruders who produce polyethylene-coated kraft liner board can get these extra advantages by using U.S.I. PETROTHENE® polyethylene resins:

HIGH PRODUCTION RATES—PETROTHENE resins have good drawdown properties, permit extrusion at high speeds.

EXCELLENT ADHESION — with minimum hot melt oxidation.

NO ODOR — an important consideration in many packaging applications.

Contact U.S.I. for information on PETROTHENE resins especially suited for coating kraft liner board.

Packagers are investigating polyethylene-coated corrugated board for applications like these:

Bulk shipment of meat, where moisture and grease-proof interiors reduce weight loss of the meat and keep moisture from weakening the carton.

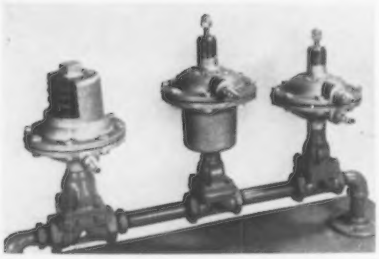
Shipment of furniture and other hard goods, where abrasion damage from the container has been a problem.

Bulk bakery and confectionery shipments, where absence of grease-wickage makes containers suitable for reuse as point-of-sale displays.

In concrete construction forms, where the polyethylene coating acts as a release agent.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
99 Park Ave., New York 16, N. Y.
Branches in principal cities

NEW EQUIPMENT & SUPPLIES



Air Operators for Remote Actuation of Diaphragm Valves

A complete line of air-powered diaphragm operators for remote actuation of its diaphragm valves is announced by Hills-McCanna Co., 4600 West Touhy Ave., Chicago 46, Ill. Three types of operators are offered: air-open air-close; air-open spring-close; and air-close spring-open. Each is built in four sizes for ½ and ¾ inch, 1 and 1¼ inch, 1½ and 2 inch valves. Other types of operators are available for valve sizes through 14 inches.

The spring-loaded operators return the valves to full-open or full-closed position in event of air system failure. Where this is not necessary, the air-open air-close model offers the advantage of smaller size and minimum air pressure requirement. For throttling service an optional positioner with indicator is provided. An optional telltale is also available to indicate open or closed position of valves not equipped for throttling.

Design features of the new operators include ability to actuate diaphragm valves at line pressures up to 150 p.s.i. small physical size, and interchangeability of parts. Also, the range of four sizes is said to allow closer matching of the operator and valve, insuring minimum operator cost for any size valve and minimum space requirements.

FOR UNLOADING CHIPS from railway cars, the Bowater Carolina Paper Corp. of Catawba, S. C., uses two Warner & Swasey Gradall machines equipped with telescoping booms. The specially-built Southern Railway cars have full length doors on each side. These doors raise about five feet to expose the cargo of chips, which are compacted due to the motion of the cars in transit. To empty a car, the Gradall's boom breaks a hole in the compacted chips with a push-swing motion. It then completes the unloading with the push-pull action of the telescoping boom. The chips drop into a pit beneath the cars.

VACUUM FILTER, having a large impregnated felt cartridge that is reusable, will remove particles as small as 5 microns in size without restriction to the vacuum flow. Oil fumes can also be removed. Model 1125MV filters will handle flows up to 4000 c.f.m. and are equipped with a petcock for draining the large sumps. They are available from stock in pipe threads of ¼ to 2 inches, and with pipe flanges for lines up to 8 inches. Wilkerson Corp., 1548 W. Mansfield, Englewood, Colo.

Gums Usable as Adhesives In Pigmented Coatings

High fluidity gums capable of replacing synthetic latices in high solids pigmented coatings are announced by Penick & Ford. These hydroxy ethyl ether derivatives of corn starch are sufficiently fluid to permit their use as the sole adhesive in some pigmented coatings and in combination with latices in other cases. They are said to produce level coatings having low stable viscosity, high gloss and excellent ink receptivity.

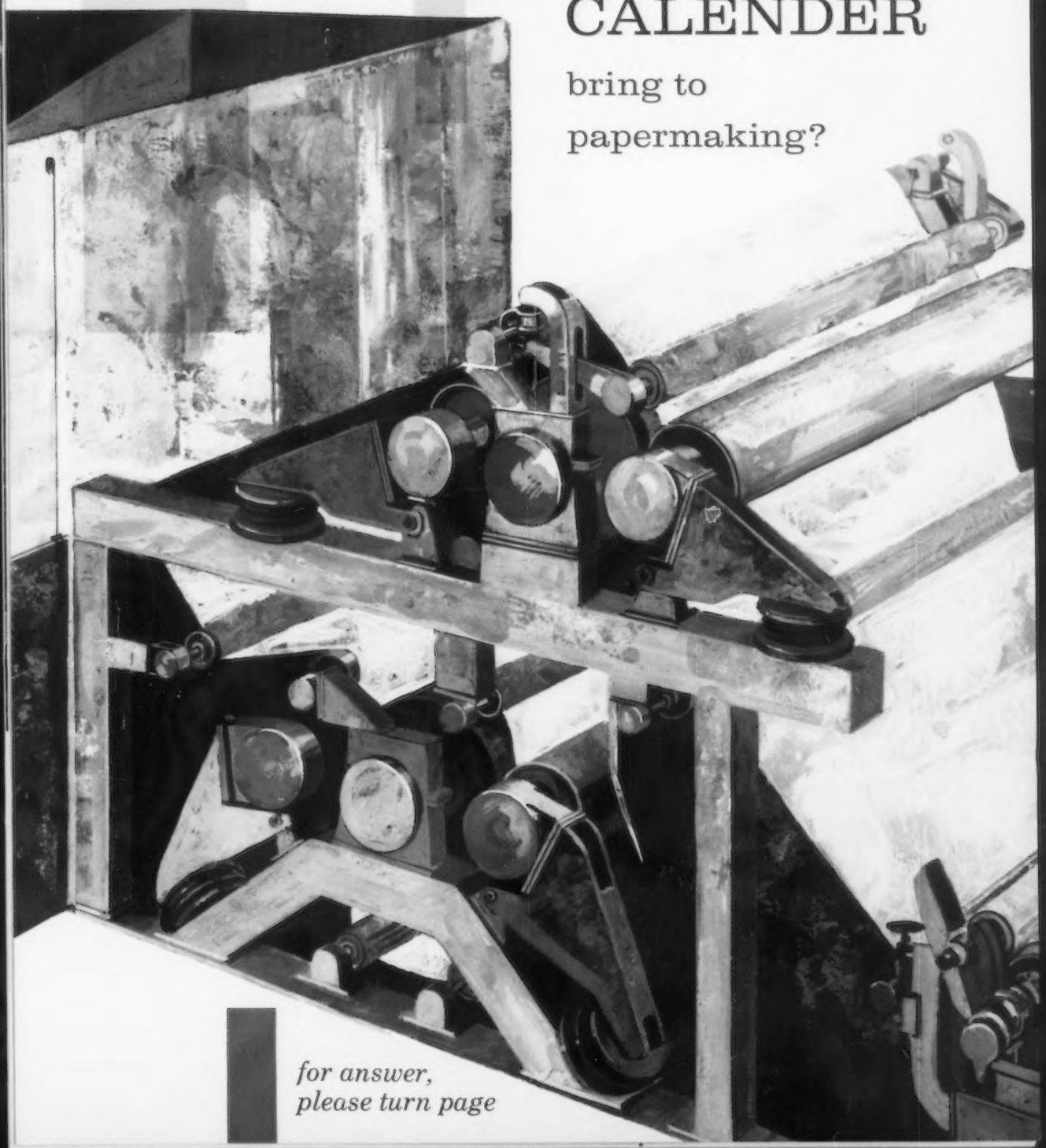
These derivatives are now available in two groups designated as Penford Gums 2000 and 3000 series. Both groups have a wide range of viscosity. The gums are suitable for pigmented size press coatings for

(Continued on page 19)

what dramatic
new developments
does the

BELOIT GLOSS CALENDER

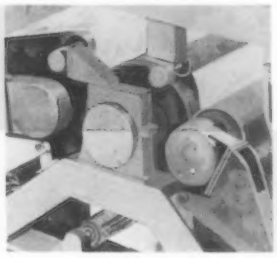
bring to
papermaking?



for answer,
please turn page

Beloit GLOSS CALENDER*

brings an improved calendering method to papermaking



While conventional machine calendering is accompanied by reduction in bulk, reduction in sheet strength, and other disadvantageous conditions, the BELOIT GLOSS CALENDER gives promise of producing equal or better finish while preserving bulk and strength.

Many intriguing possibilities are indicated for printing papers, food boards, pretreatment, and final finishing of coated papers, envelopes, and folding boxboards.

In operation, easy handling and improved machine efficiencies should result. The BELOIT GLOSS CALENDER may be used on or off the machine.

*U.S. and Foreign Patents Pending

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS. U.S.A.

BELOIT

PAPER MACHINERY

your partner in papermaking

TEST SHEET

TEAR OFF THIS SHEET...

TEAR OFF THIS SHEET...

WET IT!

...THEN TEST IT! (USE APPROVED TAPPI STANDARD METHOD FOR TESTING WET STRENGTH.) NOTE THE HIGH WET STRENGTH AND HOW WELL THE SHEET MAINTAINS IT. FOR THE SECRET OF THIS SHEET'S WET STRENGTH, JUST TURN PAGE.

CYANAMID

TEST SHEET

THIS SHEET PRODUCED WITH **CYANAMID'S PAREZ 607®**

MELOSTRENGTH® RESIN

GIVES YOU THE **WET STRENGTH** YOU NEED TO MEET EXACTING SPECIFICATIONS

Like all papers made with a MELOSTRENGTH Resin, this sheet has extraordinary strength even when soaked. It had its strength the moment it left the machine. It will keep its strength even under storage conditions of high humidity. It is resistant to most chemicals and acids. MELOSTRENGTH can be applied to papers of practically every strength and grade. It is especially recommended for grocery bags because it minimizes bursting danger during rainy-day shopping or from frozen foods or other moist articles. MELOSTRENGTH is also ideal for the manufacture of bathmats, laundry tags, filter paper, butchers' wrap, photographic paper and other wet strength papers. For full information, get in touch with us.

CYANAMID

AMERICAN CYANAMID COMPANY · PAPER CHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.

(Continued from page 18)

paper and board where higher solids and lower viscosities are desirable. Penick & Ford, Ltd., Inc., Cedar Rapids, Iowa.

"Pivoting" Pyrometer Detects Hot Spots on Rotary Kilns

An easily-installed "pivoting" pyrometer system that continuously scans and records the temperatures on the shell of a rotary kiln has been developed by Leeds & Northrup Co. Called the "Rayoscan" System, the equipment automatically signals an alarm before any potential hot-spot reaches the dangerous stage. It "points out" the location, and shows the rate of change of the hot-spot temperature.

The Rayoscan "package" features a scanning unit consisting of a sensitive L&N Rayotube (heat radiation) pyrometer combined with a drive unit. Advanced by the drive unit, the Rayotube pivots through an arc of 85° as it senses temperatures along the surface of the constantly-revolving kiln.

Bolted to any nearby surface—beneath, beside or above the kiln—the scanning unit does not require specially built traversing mechanism or structural support.

Temperatures are charted on a Speedomax H recorder mounted on the operator's instrument panel. The special span of the Rayoscan system — from 200° to 1000°F. — records not only hot-spot temperatures, but also normal operating temperatures. Leeds & Northrup Co., 4901 Stenton Avenue, Philadelphia, 44, Pa.

LIQUID LEAK DETECTOR has a fine bubbling action that detects leaks in pressurized air or gas lines when a thin, solid stream is applied to connection. The solid stream method of application avoids bubble formation from spraying. Snoop will even detect leaks at the bottom of connections in vertical runs.

Snoop comes in an 8 oz. polyethylene squeeze bottle with a ⅛ inch tube adjustable from ½ to 12 inches length. Nuclear Products Co., 15636 Saranac Rd., Cleveland 10, Ohio.

Ambient Light No Problem for Closed Circuit TV Monitors

General Electric Co. has developed a series of closed circuit television monitors with an expanded bright-

ness range for operation in areas of high ambient light. Because of this, an accessory polarized safety glass faceplate for additional effectiveness in minimizing reflections and improving contrast ratio is available. The monitors operate with any standard monochrome camera.

With picture detail of an 800-line minimum horizontal resolution, the monitors are said to exceed the capabilities of all standard camera chains, thereby taking 100-per cent advantage of camera performance. The monitors are further characterized by image steadiness, virtual freedom from geometric distortion and extended duty ability. Even after 24-hour continuous use, performance degradation is negligible.

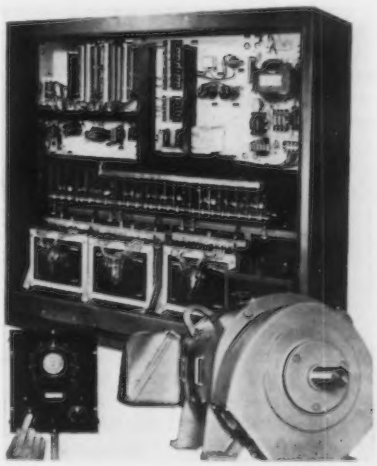
The monitors are provided in cabinets or rack mounting and in three screen sizes—14, 17 and 21-inch. Through interaction of controls, size, focus and linearity are operated individually, and adjustment of one has no effect on the others. The monitors are equipped with an input circuit that substantially cancels out picture disturbance caused by surrounding high-current wires.

No major disassembly is necessary in any normal servicing or adjusting, it is reported. Either side of the cabinet can be removed easily with the loosening of three screws. Removal of a side panel exposes parts. Operation of set-up adjustments can be made by one man looking squarely at the tube. All other primary picture adjustments are on the front panel.

Wiring and components are accessible through removal of the bottom cover panel. It is not necessary to separate the chassis from the cabinet. The picture tube face and the glass faceplate also are easily accessible for cleaning, again through the loosening of four screws. All three model sizes use the same aluminum chassis, which serves as the base of the cabinet design. Cabinet models are equipped with a handle on the top for easy moving from one location to another. General Electric Communication Products Dept., P.O. Box 4197, Lynchburg, Va.

Static-Powered V.S. Drive Available Up to 200 h.p.

A variable speed drive, V-S Statatron, which uses silicon diodes and saturable reactors to rectify the current from a.c. to controllable d.c. has been introduced by Reliance Electric and Engineering Co. The statatron is a static powered drive for wide range variable speed from in-plant a.c. circuits, available from 1 to 200 h.p. They work in combina-



tion with a transistorized power exciter to supply variable voltage.

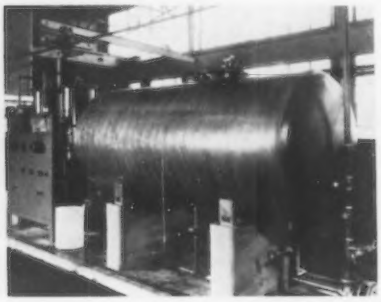
The Statatron consists of only three basic components: The Super 'T' d.c. motor, the operator's station and the control cabinet. The use of a static power supply reduces the overall size of the control unit. In some sizes the Statatron V-S is said to be 35 per cent smaller than other conventional units. The elimination of a motor-generator set provides additional savings in maintenance costs.

The Statatron is quiet. The static drive offers vibrationless operation of the control unit because there is no rotating power unit. Dynamic braking gives smooth slow-downs and stops. Reliance Electric and Engineering Co., Cleveland 17, Ohio.

PLASTIC COVERED ROLLS, covered with any thickness of any standard NEMA grade plastic, prevent marking of product being handled, increase the coefficient of friction, resist chemical attack, withstand heat and also provide dielectric insulation. Furnished in sizes to 60 inches dia. by 11 ft. long with through or stub shafts. Barclay Machine, Inc., 784 Euclid Street, Salem, Ohio.

Glass Reinforced Polyester Tank For Corrosive Service

The availability of a horizontal 1,000-gallon processing tank fabricated from a specialty glass-reinforced polyester has been announced by Justin Enterprises, Inc., Cincinnati, Ohio. The tank is recommended as a processing unit where corrosive conditions necessitate a structure with high chemical resistance. Other capacities, ranging from 50 to 10,000 gallons, are also available.



Tests have shown that the bisphenol-A polyester is more resistant to prolonged contact with most acids, alakalies, and bleaches at elevated temperatures than general-purpose or other polyesters. The specialty resin, called Atlac 382, is manufactured by Atlas Powder Co.

A high strength-to-weight ratio, durability, and impact resistance are claimed by a special Justin fabricating technique that produces a high fiber glass content. Corrosion resistance is provided by a chemical-resistant coat of the polyester which forms the inner surface of the tank.

The tank, 10 ft. long, 50 in. in diameter, and with a wall section of ¼ in., weighs approximately 300 lbs. Translucence allows observation of the liquid level within the tank without the use of liquid level gages. Supplied complete with manhole, stainless steel fittings, and mounting saddles. Justin Enterprises, Inc., 3755 Edwards Rd., Cincinnati 9, Ohio.

Tests Scuffing and Rubbing Resistance of Ink Film

Testing Machines, Inc., now has available the Sutherland Ink Rub Tester, for evaluating the scuffing and/or rubbing resistance of an ink film on paper and paperboard. The machine is designed so that the results are reproducible. Dry rub, wet rub, wet bleed or transfer, wet smear and functional rub tests can be made with this tester.

Few, if any, inks will pass rubbing, wet or dry, without a slight transfer of color, it is said. Decisions on the suitability of an ink are best made by running comparative tests, checking on acceptable samples at the same time and under the same conditions.

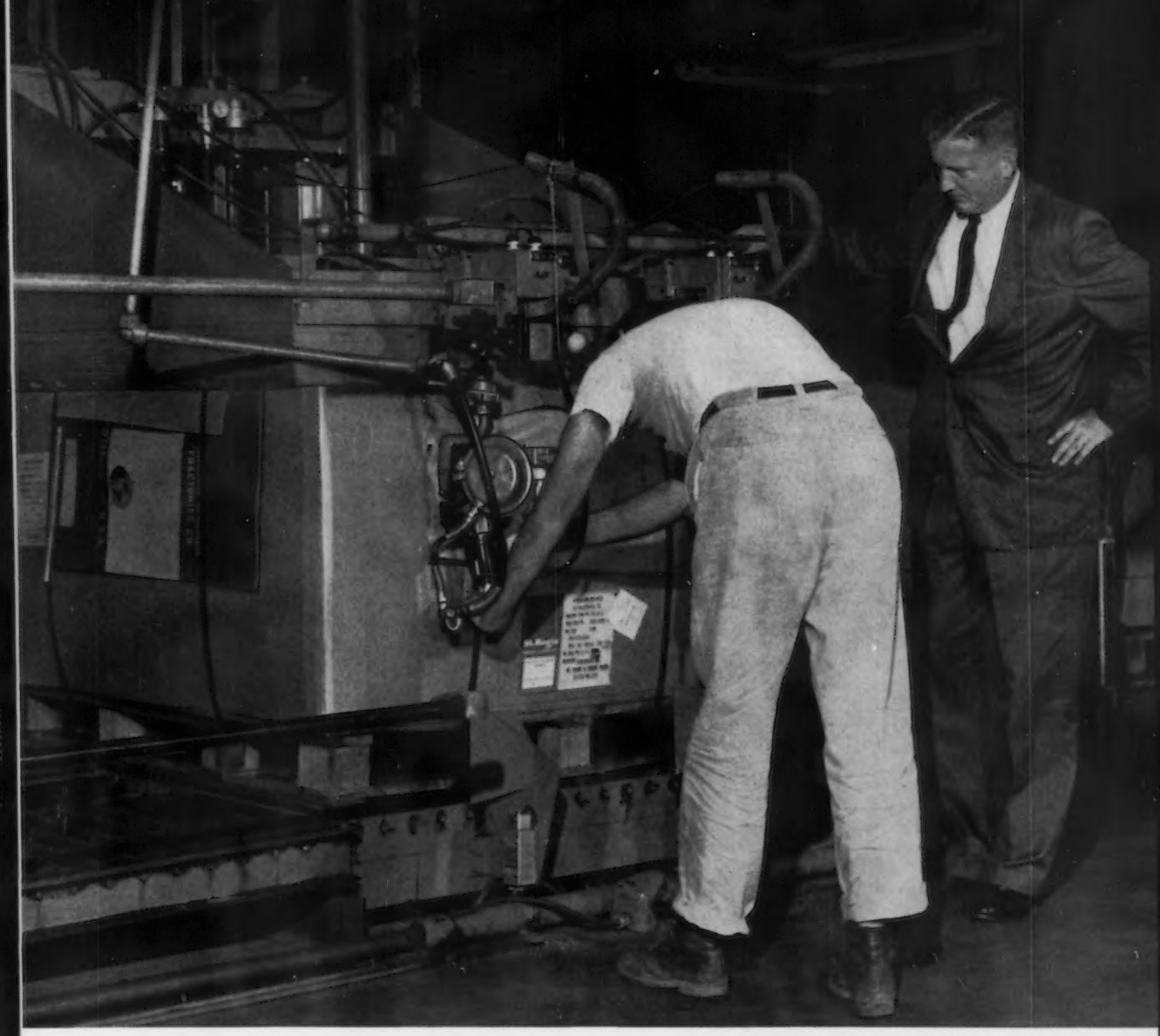
Consideration must be given to the time interval between printing and testing, particularly with slow drying inks. Also, prints should be protected from dust and dirt between printing and testing. Testing Machines, Inc., 72 Jericho Turnpike, Mineola, N. Y.

Spray Nozzle with Automatic Clean-Out of Orifice

Spraying Systems Co. has introduced its 8651-¼JAUH Automatic Hydraulic Spray Nozzle with the feature of a clean-out needle that automatically clears the orifice with each on-and-off cycle of the nozzle. This is done by means of a clean-out needle extension of the orifice shut-off valve. Each time the valve closes the clean-out needle moves through the orifice opening to clear out any solid residue that might otherwise adhere. Compressed air is used to actuate the valve. The precision air cylinder actuating mechanism may be operated at any speed up to 180 cycles per minute. These spray nozzles are supplied in a choice of interchangeable orifice tips. Spraying Systems Co., 3220 Randolph Street, Bellwood, Ill.

Keep your eye on our Classified Advertising Section

STRAPS 50% MORE WITH A SINGLE SQUEEZE!



Acme Idea Man J. R. Taylor views Idea No. S3-68 which he suggested to St. Regis Paper Company, Pensacola, Florida.

St. Regis Paper Company now applies all four straps under a *single* compression cycle—secures as many as 124 mixed pallet-loads of multi-wall bags per 7½-hour shift!

This 50% increase in output was accomplished by integrating an Acme Steel E50 Strapping Press and fully-powered A4 Steelstrapper into a new roller conveyor line. Straps are power fed automatically completely around pallet loads at once . . . tensioned, sealed and cut by air power, and through fingertip control.

How much more efficiency can you squeeze from your packaging operation? Call your Acme Idea Man or clip the coupon for further facts.

ACME STEEL

IDEA LEADER IN STRAPPING

ACME STEEL COMPANY
Acme Steel Products Division
Dept. PJS-31
135th St. & Perry Ave.
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Please send me Idea No. S3-68 and examples of how major companies in my field use Acme Steel Strapping.

*Name*_____

*Title*_____

*Firm*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

Major Improvements Made in Woodhandling, Pulping and Drying at Thurso

Harry Dyer,
Assistant Editor,
Paper Trade Journal

Something new has been added to Quebec's Thurso Pulp and Paper Co. . . .

- A unique integrated chip storage and air-handling system. Thurso is now one of the first northern mills to utilize outside storage of chips.
- Micro-screens, heretofore rare in pulp and paper mills, which treat raw process water at lower cost.
- Flakt airborne dryer feeding directly into an automatic sheet cutter-layboy unit.

. . . and these innovations highlight the company's recent expansion and modernization program to push daily capacity up to 350 tons of bleached pulp. This Canadian mill was originally built to produce 200 t.p.d. of high brightness hardwood and softwood kraft pulps. Its design then had incorporated many provisions for the eventual increase in tonnage, even possibly converting to paper and board grades. As a result of this latest program the mill has realized the former goal.

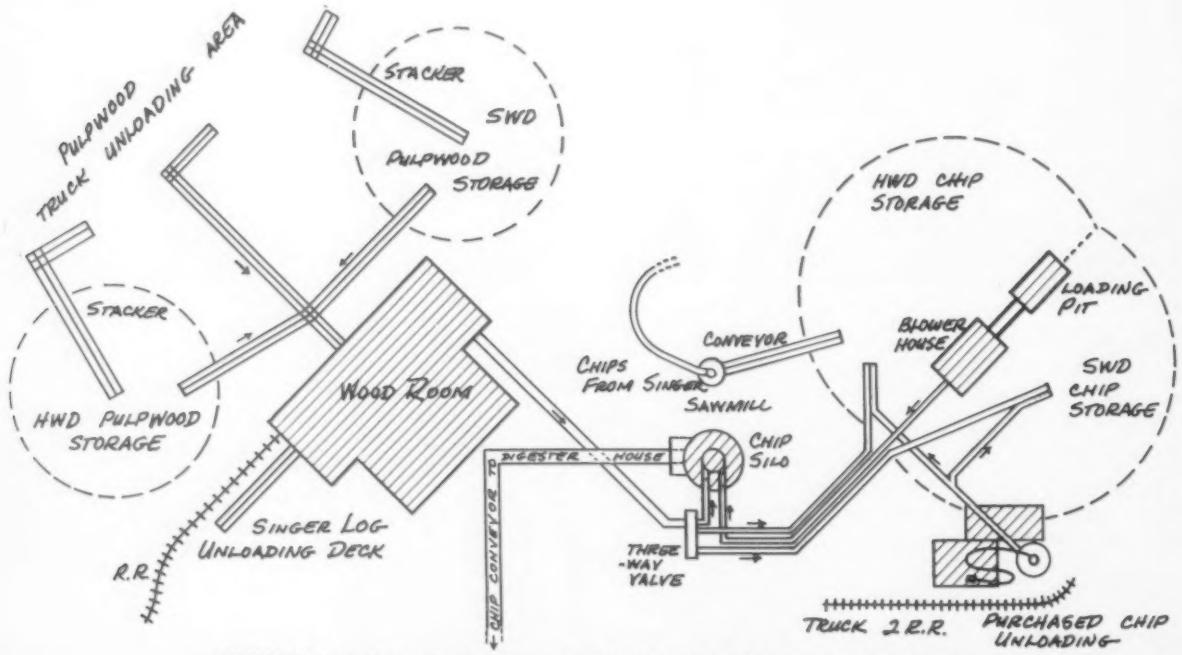
Thurso Pulp and Paper Co. started up formal operation of its bleached kraft mill in the summer of 1958. It is a unique mill in several respects in that its principal owner, Singer Manufacturing Co., also operates nearby a sawmill and furniture veneer plant, all of which are supplied from the same timberlands. It was also the first kraft mill in the Province of Quebec in more than 45 years. The recent expansion has assembled many unique innovations that now place Thurso in a truly competitive position in an area that contains over 50 other pulp mills. The August 25, 1958, issue of PAPER TRADE JOURNAL carried an original description of the mill at the time of its startup.

Officers and supervisory personnel of the company are: C. S. Reynolds, president and general manager; L. E. Hird, vice president and treasurer; T. A. Collings, assistant general manager; C. C. Rippberger, general superintendent; R. J. Neale, technical director; D. B. Lyons, assistant technical director; W. G. McKeon, director of pulpwood procurement; and G. D. Senn, purchasing agent.

Micro-Screening Raw Water

One of the most significant aspects of Thurso's expansion are the micro-screens for raw water treatment. This equipment is relatively unknown on the North American continent and brand new to her pulp and paper industry insofar as the editors are aware. Their use prior to Thurso's installation has been largely confined to municipal water works. The screens are manufactured in Great Britain by Glenfield & Kennedy, Ltd. Drummond-McColl Co. of Montreal supplied the units to Thurso.

The screens themselves are cylindrical in configuration with the drum covered by a fine wire cloth. The strands in the cloth are made of stainless steel wire reported to be only 0.0016 inch in diameter. The cloth will be serviceable for more than 30 years, reports the manufacturer.



SCHEMATIC DIAGRAM OF THURSO'S NEW WOOD AND CHIP HANDLING SYSTEM.

MICRO-SCREEN UNIT. Shower, ultra-violet lamp and drive are easily discernible.

The drum, one end of which is open, the other is sealed, revolves about a hollow shaft. The open end is butted against an opening of a deep well sump containing raw water. Thus, by hydrostatic pressure, the raw water flows into the drum and through the wire mesh. The drum itself is only partially submerged in the screened water well, as can be discerned in the accompanying photograph of one of Thurso's units.

At the top center of the drum and running along its length is a shower pipe. Shower water (which is recycled screened water) is projected from the outside through the screen mesh. Immediately inside the drum parallel to the shower is a stainless steel trough which serves to collect the shower water (along with the debris washed off the inside of the wire cloth) and funnels it into the hollow shaft. An extension to the shaft conducts the effluent to a sewer. Teeth on the rim of one end of the drum mesh with a gear connected to a 4 h.p. electric motor to supply rotation for the drum.

The two micro-screens at Thurso are 10 ft. in diameter by 10 ft. long, each with a capacity of 3250 g.p.m. The units are located about one mile away from the source of supply—the Ottawa River. Raw water from the river passes over a travelling screen, whereupon, orifice plates meter part of the total flow to the screens. The remainder goes to the filter plant. The raw water sump at the screens contains a dividing wall, and via gate valves, only one screen may be kept on-line at a time if desired. Flow through the screens is controlled by the water level in the screened water sump. The screened water is generally suitable for use in the mill except in the bleach plant, machine room, and boiler house. Some of its uses include brown stock washing and dilution water, pump gland and seal water, hose water, barometric condenser water, ClO_2 refrigeration water, caustic dregs wash water, etc. This water is distributed to the mill (1000 feet away) by three (one on standby) 3500 g.p.m. Layne & Bowler vertical pumps powered by 250 h.p., 4160 v. motors.

The filtration plant contains the following basic equipment, listed in order of flow: coarse screen, volumetric clay, lime, and alum feeders, two 5000 g.p.m. precipitators (60 min. retention) and four 1875 g.p.m. sand and gravel gravity filters, plus chlorinators.

The net result of the micro-screens has been to cut water treatment costs considerably. Whereas, prior to the installation the general process water was drawn off the clarifiers at the rate of 2,000 g.p.m. (5,000 g.p.m went to the filters) and, at that, after the addition of chemicals.

One of the problems that has arisen from the use of the screens has been slime accumulations on the wire. The screens were found to be blinding every seven-eight days use. To prevent this, chlorination of the unscreened water was not considered feasible because of possible corrosion to the fine wire screen. One solution to the blinding problem has been to mount ultra-violet lamps on the drum following the shower, and to chlorinate the screened water at the pumps for mill use.

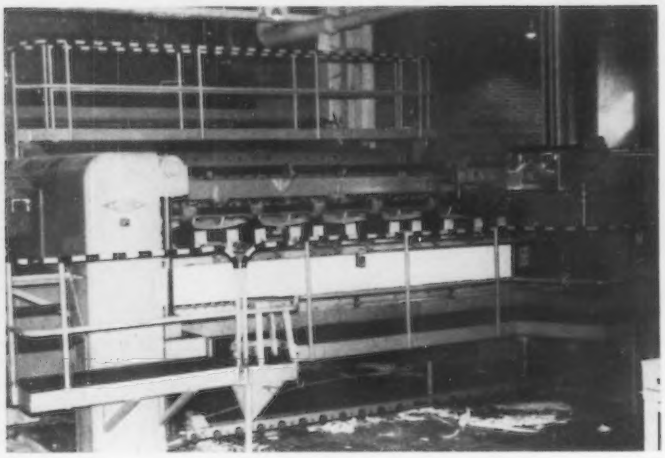
FLAKT DRYER. Sheet is conveyed by air through 21 passes.

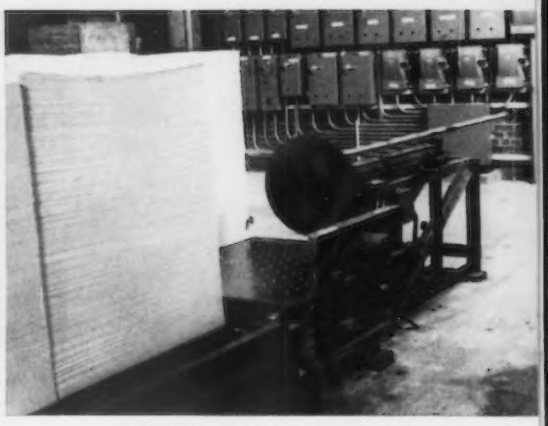
Flakt Drying and Pulp Baling

The pulp drying machine is a conventional fourdrinier with a 184-inch wire width. Its press section is comprised of three plain presses having two 5-ft. predryers installed between the second and third presses. The totally-enclosed dryer section contains 42, 5 ft. by 180-inch face dryers. Previously, the sheet fed directly from the dryers into an automatic cutter-layboy; the bales were delivered into the Dominion Engineering bale press followed by an Ovalstrapping manual wire tying station and into a Mathews elevator to the warehouse.

Naturally, new drying capacity was required if tonnage was to increase. This new capacity is provided by a SF Products Ltd. Flakt model L dryer (in which the sheet is conveyed through the drying chamber by air) augmenting the drum dryers. The Flakt installation was facilitated by first relocating the bale press, strapper and elevator. Then a new and faster Lamb-Grays Harbor automatic cutter-layboy was installed in line but behind the original cutter. When the new cutter was ready to operate, the sheet off the drum dryers

CUTTER-LAYBOY automatically feeds six piles of sheets to bale finishing system.





HYDRAULIC RAM provides right angle transfer of bales. Corner platform is an air-float table.

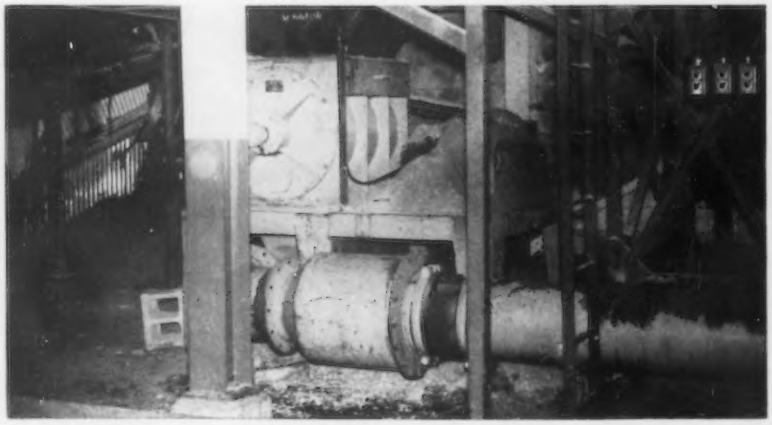
was passed through a floor slot into the basement, run for 60 ft. over draw and carrying rolls (under the original layboy & cutter) and back up through the floor into the new cutter. The bale finishing system was meanwhile tied into the new cutter. The former cutter-layboy unit was dismantled, thus providing the space for the Flakt dryer.

Physical dimensions of the Flakt unit are 38 feet length, 24½ feet height, with 186 inches face. The drying air is heated by steam coils supplied with 155 lb., 170°F. steam. The dryer is designed to evaporate 17,000 lbs. water per hour in drying the sheet from 57 per cent to 90 per cent b.d. in 21 passes. To circulate the heated air, there are 48 fans driven by 10 h.p. motors. Constant sheet tension is provided by dancer and hitch rolls at the entering and emerging ends of the dryer that continually transmit impulses to a built-in computer. This computer is interlocked with the dryer and cutter drives and automatically compensates for sheet shrinkage to provide a constant tension independent of basis weight or dryness. Threading of the dryer and its basic operation are conventional; these facets have been described together with operating data on the first Swedish installation in the September 23, 1957, issue of PAPER TRADE JOURNAL.

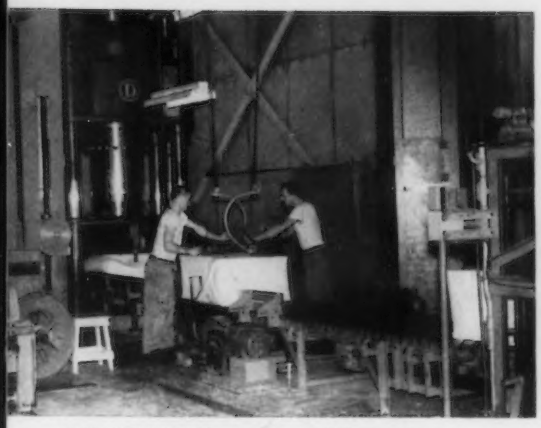
The bale finishing system is essentially the same as before the expansion except that the flow now simulates a square three-sided shape. In operation, six piles of pulp each 30 inches in width are first accumulated on the layboy. At a pre-set signal, the layboy automatically discharges the piles perpendicularly onto a roller belt conveyor. A hydraulic ram next provides right-angle transfer bale-by-bale to another roller belt. A series of limit switches times the rate of transfer. A set of scales is located on this second leg. The bottom wrapper is set under the bale by an operator as it slides onto the scale platform. Bales are adjusted to weight by the operator adding or subtracting laps. The top wrapper is then placed on the bale. The rate at which bales are weighed is set by the operator's own speed. A screw-driven paddle, when swung into position by the operator, moves the bale off the scale onto another hydraulic ram right-angle transfer, whence the bale is shuttled into the 800-ton hydraulic bale press. As the bales emerge from the press, two operators fold the wrappers by hand and wire-tie the bales. Finished bales are carried by a live roller conveyor into the four-bale vertical stacker-lowerer which delivers the stacks to the warehouse floor below. Stacks are picked up by fork lift trucks and carried to RR cars, trucks or storage as the situation demands.

Pneumatic Chip Handling

If one were to ask what area of the mill received the greatest modification, the answer would most likely be in the wood handling and preparation department. One reason for this attention is that it was highly desirous to effect large scale reductions in labor costs and in handling costs. Another was to be able to fully utilize all the available sources of wood as economically as possible. A third reason was to consolidate the barking, slashing, and chipping operations, previously separate and distinct, un-



ROTARY FEEDER, in woodroom, distributes accepted chips from screens to storage silo or into pneumatic pipe line.



BALE STRAPPING operation follows the hydraulic press and precedes the elevator to the warehouse.

BLOWER AND DRIVE unit, and intake pipe for pneumatic chip line in woodroom.

der one roof. The result is a system that is truly integrated and quite unique.

The concept that helped effect this result was to be able to chip all pulpwood as soon as possible after it entered the mill, and to store the chips, rather than pulpwood, in outside piles. A further result is that the system permits the woodroom to operate independently of the mill production schedules. Thus, manpower and equipment is more effectively utilized.

Thurso now receives wood from five primary sources: as 10 ft. logs from Singer's timberlands; as purchased pulpwood (trucked in locally); as purchased chips from local sawmills; as chipped residues from Singer's sawmill; and as purchased slabs and edgings from local sawmills who do not chip their residues. This last category is converted to chips in Singer's sawmill equipment.

There are two small areas available for the temporary storage of rough roundwood, particularly in the winter when purchased pulpwood deliveries reach their greatest volume which is in excess of woodroom capacity to handle (due partly to reduced capability of the drums to debark frozen wood). Each of the areas is serviced by a double chain stacker. Thus pulpwood arriving at the mill can be unloaded into its appropriate hardwood or softwood pile, or it can be fed directly into the woodroom by a belt conveyor.

Logs arrive from Singer's timber tracts in 12-cord rail carloads. This wood is unloaded by cranes onto a live deck. A jack-ladder elevates the logs and conveys them into the woodroom and through a slasher which halves them into five-foot bolts. These pieces join the regular flow of purchased pulpwood prior to one of three Ingersoll-Rand 12 ft. by 45 ft. barking drums. The debarked wood is conveyed past a sorterman and a splitter. The acceptable sticks then pass in single file into an 8 ft. Norman chipper powered by a 600 h.p. motor. Following the chipper are three banks of chip screens. The accepted chips from these screens are conveyed into a 10 h.p. rotary airlock feeder and blown via a 16 inch line through a three-way valve to the appropriate hardwood or softwood chip storage area, or they are blown directly into a chip silo. This pipe line is sized to handle up to 60 cords per hour. Air is supplied at a rate of 12,500 c.f.m. and pressure of 7 p.s.i. by a Sutorbilt blower driven by a 400 h.p. motor.

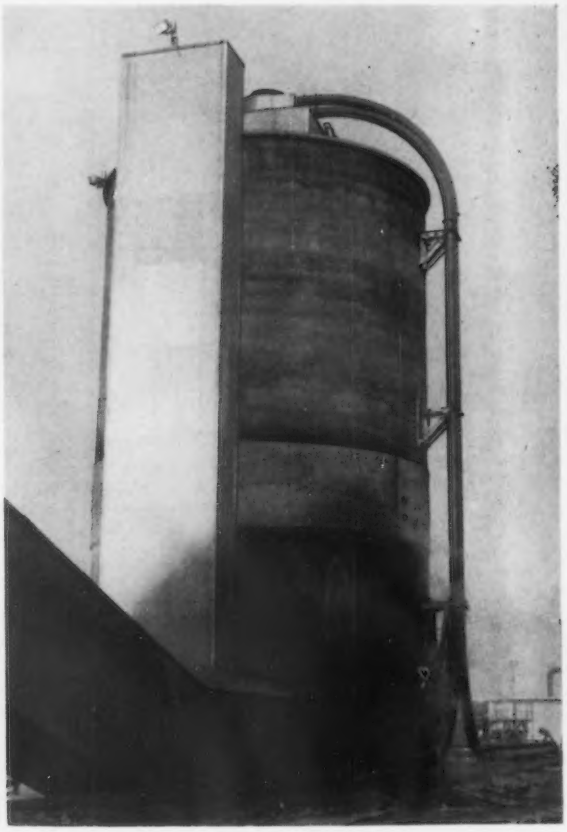
Back in the woodroom, bark is sluiced out from under the drums, conveyed into a bark hog and thence into a FMP bark press. Moisture content of the emerging bark is in the neighborhood of 45 per cent. This bark is combined with other unpulpable residues — screen fines, slasher sawdust, and bark and sawdust from the Singer mill (blown to the woodroom)—and burned in a combination boiler.

Singer's sawmill chips are blown through another 10 inch, 1500 ft. Rader Pneumatic system into a cyclone beside the hardwood chip pile. A small conveyor belt deposits the chips onto the pile. Purchased chips arrive at the mill yard in dump trucks or in rail box cars. These chips are unloaded by a Rader vacuum system and blown to the appropriate storage pile. Chips are delivered to the suction intake by a

THREE-WAY VALVE is set by momentarily halting flow of chips (but not stopping air stream) and swivelling the ess-shaped pipe over the appropriate opening.

FRONT-END LOADERS dump chips from storage piles into pit.

VACUUM SYSTEM unloads chip RR cars and trucks. Chips are sucked up by man-handled nozzle (behind baffle) through flexible pipe into cyclone.



CHIP SILO and section of enclosed conveyor to digester. Fifty foot high silo has 250 cord capacity. Turntable at bottom of silo feeds chips onto conveyor belts; operation is remotely controlled from digester house.

mobile "digger" about the size of a warehouse fork-lift truck. The vacuum line is connected to the digger by a length of flexible metal hose, giving the unit the appearance of an oversize vacuum cleaner. Rated capacity is 20 cds. per hour or about one box car per hour.

The chip piles themselves are built-up on a gravel-based, 3 inch thick asphalt pad approximately 150,000 sq. ft. in area. Each pad has the capacity to store nearly 15,000 cords of chips. Thurso has not yet encountered any serious deterioration of chips in storage; deterioration is conceivably less than what might occur to stored roundwood. Nor is there any difficulty reported in reclaiming chips from frozen piles. Chips are reclaimed from the piles by wheeled tractors equipped with front-end loaders pushing the chips into a central pit. At the bottom of the pit, a chain conveyor feeds the chips into a 250 h.p. Rader system, this one rated at 40 cords per hour capacity. These chips are propelled into a cyclone and settled into the 50 ft. high chip silo having a storage capacity of 250 cords.

At the bottom of the silo, an 8 ft. diameter turntable, remotely-controlled from the digester house, feeds chips onto a 30-inch belt conveyor system, which feeds directly into the digesters.

What's New in the Pulp Mill

Digester capacity was doubled by the installation of two 6100-cu.ft. mild steel digesters. These are in addition to four 2900-cu. ft. existing digesters.

Originally, two identical blow tanks 20 ft. in diameter by 52 feet high had been erected. These have been replaced by a new 19,000-cu. ft. tank, of sufficient capacity to contain 2½ blows from the larger digesters. However, the two original tanks are being retained as storage capacities for making mill trials of specialty pulps. Foxboro magnetic flowmeters installed on the outlet of the tanks (on the new blow tank as well) control the flow of stock.

Dilution of the pulp leaving the blow tank is controlled through a vertical agitator and ACAP pump.

The original brown stock washers and three primary centrifugal screens are of adequate size to handle the increased capacity. However, the secondary screening capacity (one centrifugal screen) has been augmented by two 12-inch Cyclean centrifugal cleaners to handle its accepts. Rejects from these two cleaners pass through a third 7-inch Cyclean. This latter's rejects—⅓ t.p.d.—are sewered. Its accepts are returned to the secondary screen accepts. Accepts from the primary cleaners are returned to the primary screen outlet side.

The rejects from the secondary screen are sent to a tailings tank and thence via a drainer into a 24 inch double disk refiner powered by two 100 h.p., 1750 r.p.m. motors.

From the refiner chest, the refined rejects return to the secondary screen feed tank. The tailings tank also receives rejects from the Jonsson screen located in the stock preparation room.

In the recovery plant, evaporator capacity has been increased by 20 per cent with the installation of four Horton Steel external liquor heaters, in series with each of the first four effects. . . . Other equipment in the recovery and recausticizing plant is of adequate size to handle the larger tonnages. However, additional white liquor and green liquor storage capacities have been installed.

Upping Bleach Plant Capacity

The original bleach plant whitened pulp to 90 G.E. in five steps: Chlorine, caustic, chlorine dioxide, caustic, chlorine dioxide. The chlorine and chlorine dioxide towers are upflow stages; the caustic towers are downflow stages.

To handle the increased tonnage in the bleach plant, all that was required was to increase pumping capacity and generally rearrange the effluent flows. This latter step was done to utilize to the utmost the use of effluents and their heat values, and to hold fresh water makeup to a minimum.

Also, to provide better mixing of the pulp with the chlorine gas and to reduce channelling in the chlorination tower, a Hooker in-line mixer and a Dorr-Oliver mechanical mixer were installed ahead of the tower.

Chlorine dioxide is manufactured at Thurso by the Mathieson process as modified by the Electric Reduction Co. of Canada. The original capacity of the plant was 3 t.p.d. This has been doubled to 6 t.p.d. with the installation of a third generator operated in series with the existing two.

The original absorption tower was replaced, a new one was added, and glass piping was installed on the ClO_2 gas, scrubber recirculating, and sulphuric acid lines. Chlorine dioxide storage capacity was also enlarged.

To provide flexibility and storage capacity to the system, three 80 ft. high tile storage tanks were erected in an annex to the bleach plant. The pulp is delivered to the tanks from the fifth stage bleach washer through an 18-inch pipe by a new thick stock pump. Each tank has the capacity to store 100 a. d. tons of bleached pulp at 12 per cent consistency.

The stock preparation system following the high density storage was modified by doubling stock cleaner capacity and adding a 6 ft. by 16 ft. Impco (Sherbrooke) gravity decker. The screening and cleaning system at this point now consists of first, 4 Vibrotor screens whose accepts are passed through 644 primary stock cleaners, and 59 secondary, 12 tertiary, and 4 quaternary units. Rejects from the Vibrotors pass through a Jonsson screen, whose accepts are returned to the Vibrotor's feed. The Jonsson rejects are treated in the refining system as previously described. Ultimate rejects from the cleaners are sewered; the fourth stage accepts return to the infeed of the primaries.

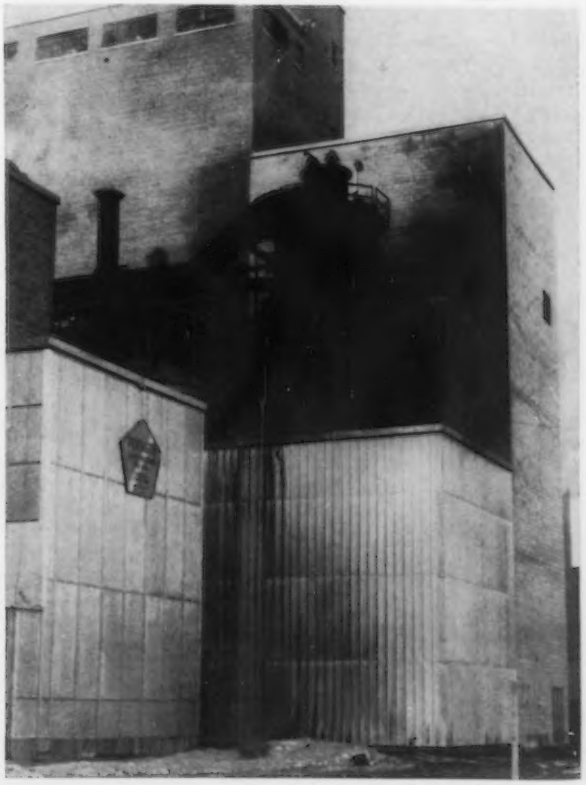
Only a few minor modifications, other than those previously described, have been made on the pulp drying machine. These modifications consisted of installing a Rotabelt unit, and slightly revising the white water piping systems; again, as in the bleach plant, to make maximum reuse of w.w. effluent and save heat.

To supply power to the expanded facilities, Thurso augments its own 7500 Kw. generating facilities by purchasing 2400 Kw. from the local Gatineau Power Co.

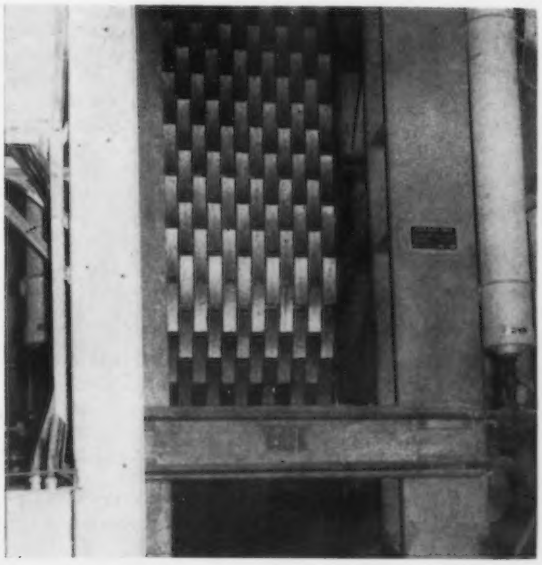
As an adjunct to the machine room, a 2000 by 77 ft., two-story building was erected to house a machine shop, storeroom, and the maintenance, instrument, engineering and operating offices.

By bringing much of its original equipment up to full capacity, and by installing a minimum of new equipment, Thurso has been able to nearly double pulp production at the relatively small cost of slightly more than four million dollars.

NEW BLOW TANK erected beside the two existing tanks (part of one showing).



STEEL APRON in bark press is comprised of curved links. Further inside press, bark is hoppered onto moving apron and passes under weighted roll. Water drains off between links, bark is conveyed to boiler.



Materials Handling—Introduction

Why Talk About Materials Handling?

. . . Because it saves Money, Time and Space!

Matthew W. Potts,
Materials-Handling Consultant

Before we can talk about something, it is necessary to understand just what the term means. This is especially true of Materials Handling. If we limit the subject, it becomes a part of the process operation and is lost. However, if we consider the following definition it is all inclusive.

What is Materials Handling?

"It is the lifting (handling), shifting (movement), and placing (storage), of *any* material regardless of its size, form, or weight."

There is not a business of any size that is not faced with a materials handling problem. It has been truly said that "the *best* materials handling, is *no* materials handling." The only production operation that the writer knows where this is practical is on the farm. This operation is when the farmer squirts the milk from the teat of the cow into the cats mouth in one jerk: No handling, No container, No transportation, No storage, No spoilage, No demurrage, No processing, No delays, No idle process machinery, etc., etc.

Since the paper industry has so many divisions within itself, plus the location and physical layout of each plant to consider, it is impossible to set up or establish any one best way to perform a given operation. We can only deal with the fundamental principles of materials handling and apply these to specific handling problems within the industry or individual plant. It is for this reason that the editors of Paper Trade Journal have prepared a series of articles dealing with specific handling operations within the industry. These specific articles will cover material handling aspects of all phases of pulp and paper mill operation, from log storage and transportation to finishing and warehousing.

More Than a Patchwork Job

Previous articles have dealt with various phases of the subject, and a timely article by Donald S. Adams, materials handling supervisor of Champion Paper & Fibre Co., in the July 20, 1959 issue, clearly illustrated the need of doing more than a "Patchwork Quilt Job on Materials Handling." If you expect to reap the benefits of good materials handling, it requires a program, with proper technical skill, the same as is required for making good paper products.

Materials handling is not a science, but an art, and therefore requires a broad application of common sense to good engineering principles. It requires a knowledge of what standard equipment is available to help solve the problem at hand.

The product, the physical layout of the plant, the condition of the operations area, the location of the storage, receiving and shipping areas, and the various products to be handled, are all factors that must be given consideration.

The simplest handling operation is sometimes the best place to start. What looks simple can sometimes be expensive, because it is an accepted method that has been used for years. A little study will quite often show that the old method can easily be improved, at no great expense, and with considerable savings, in money, time and space.

More complicated systems of conveyors, pumps, filters, etc., must be developed by good engineering practice and should be carefully studied to see if the cost can be justified. However money savings should not be the only criteria to be considered when dealing with the subject of materials handling. Better methods of handling also lead to better safety, less damage to products, reduced demurrage bills, and many other fringe and major benefits.

If you can use a better method of handling and save space, either in the manufacturing or the storage area for raw materials or finished products, so that it is not necessary to build additional plant facilities, the need for capital expenditure may be reduced. This is sometimes more advantageous than just saving wages by reducing manual labor.

Time an Important Factor

Time is also an important factor! If you can use the same number of men and do the operation in half the time formerly required, it may permit the same number of steady employes to work full time, and not have to work overtime. Or it may reduce the need for temporary help to take care of peak loads. There are

MATERIALS HANDLING FOR PULP AND PAPER MILLS

One of the areas in our industry most susceptible to improvement, and at the same time perhaps the most neglected is materials handling. Recognizing the need for more information on this ever-timely subject, Paper Trade Journal's editors have compiled a comprehensive series of articles covering current methods, trends and recommendations for efficient materials handling.

The articles, each prepared by an expert in his field, cover all phases of materials handling in pulp and paper mills, from the woodyard to finishing and storage. Beginning in this issue with an introductory article by a highly respected materials handling consultant, we suggest that you follow this series closely as a source of basic information and new ideas.

many savings that are readily available.

Time is also a factor in keeping the process machinery running at full capacity. Lost production time can not be made up, it is lost forever. Working overtime will permit the production to be obtained within a stated period, but at considerable extra cost. If there are delays in bringing raw materials to the production line due to inefficient handling methods, or delays in taking finished products away from the production line, and these cause shutdowns to the production process, the lost time in production will often exceed the cost of installing better materials handling methods.

Good handling practice can reduce this lost time to a minimum.

Better handling methods permit the quicker unloading and placing into storage of raw materials of all classes. This operation can involve many types of handling equipment, depending upon whether the material is in bulk form or some type of container. If in bulk, some form of conveyor (screw, belt, pneumatic) can be used to advantage and, if in containers, the type of equipment or system to use will depend upon the type of container, (bag, box, drum) and the distance to be handled and the method of storage. There is, however, no doubt that all this material has to be handled, and the more efficiently it is handled, either by hand or mechanical means, will finally show up in the overall operating costs.

Eliminate Demurrage

Any method that eliminates demurrage charges at the point of unloading is a direct savings. If the operation can be performed faster by mechanical means, it generally permits more tonnage to be handled with less unloading space. And this is true, whether the unloading is from boat, rail car, or truck. The more non-productive space in a plant can be reduced, the less overhead is chargeable to production. Proper materials handling methods, permit the full utilization of all non-productive space. It also, as has been mentioned before, permits the full utilization of all production equipment capacity.

Many years ago the writer said that, "Handling adds nothing to the product, it only adds to the cost." This statement is more important today than it was then because of higher hourly wage rates, and the shorter work week. When we stop to consider how many tons of raw materials and semi-finished materials must be handled, and how many times each material must be handled through the full production cycle in order to produce a ton of finished product, it will be seen readily that any handling operation that can be eliminated, or done at a lower cost, should be given every consideration.

A quick look at any production figures will show that 25 percent to 40 percent of the production dollar is expended for non-production operations. A great number of these operations are some form of materials handling. That is why we think you should be interested in talking about materials handling. If we can show you only one way to improve your handling methods by examples contained in the series of articles to follow, we will have served our purpose. We do believe, however, that if you will read each article and talk to others about your materials handling problems, you will find many ways to eliminate unnecessary handlings.

You Have a Handling Problem!

Remember that materials handling is the lifting, shifting, and placing of any material regardless of its size, form, and weight. If you are in business, you have a handling problem that can be done better, and at lower cost.

- Will better handling methods make an addition to the plant warehouse unnecessary?
- Will a better arrangement of equipment make for quicker handling and eliminate production delays?
- Will a straight line production system speed up the shipment of finished products?
- Can a better safety record be maintained by improving the methods of handling and doing more operations by mechanical means than by bull strength and awkwardness?

These are only a few questions that every production manager, traffic manager, warehouseman, and receiving head should ask of themselves. The top management should also give the questions due consideration. Many times good ideas are presented to top management from the lower working levels and they are not approved because top management is neither familiar with the operation or the need of improving the handling or storage method. If they will take the time to give the subject of materials handling the attention that it deserves in any plant regardless of its size, they will be surprised at the savings that can be made, thus leading to increased profits, or reduced selling cost.

Now is the time to investigate your materials handling problems and then do something about it! Just talk won't help much, but study and application of the ideas to be presented in the coming issues, should be of interest from top management through to the man who has to do the work. There is no mystery to materials handling, it is clearly visible no matter where you look. What do you intend to do about it?

"Material handling is not a science, but an art, and therefore requires a broad application of common sense to good engineering principles."

ABOUT THE AUTHOR

The author, Matthew W. Potts, a material handling consultant, has an impressive background in this field. His first contact with materials handling was while employed with American Cyanamid in 1913 at Niagara Falls, Canada, where he specialized in the layout of conveyors, bucket elevators, and other mechanical handling equipment. Since that time he has been constantly associated with materials handling, in one phase or another.

In 1935 he started his own sales organization, known as the Eastern Industrial Sales Co., Inc., engineering and installing many types of equipment and methods.

Mr. Potts has been active in writing articles and lecturing on the subject of materials handling.

During the war he was associated with the Materials Handling and Equipment Unit of the Depot Operations Branch, Office of the Quartermaster General, and also acted as technical consultant for the Bureau of Supplies and Accounts, of the United States Navy. In addition, he has written a series of articles on materials handling equipment which are now published in book form, by Pitman Publishing Co.

Felt Napping—
What It Means to You

James Platt

T. M. Alexander

James R. Platt,
Chief Designer, and

Thomas M. Alexander,
Asst. Chief Designer,
Huyck Felt Co.

In the past one of the main reasons for napping was to improve felt appearance. Now more is known about the function of nap and many applications have been noted where nap serves no useful purpose or even causes poor performance. We will discuss here the surface characteristics of woven felts and explain how the variation in napping can influence machine operation.

Definitions

As an aid to mutual understanding it will be best to define several terms that will be used in this paper. Some of the more important ones are:

1. **Nap** is composed of individual felt fibers that have been pulled from the body of the felt by means of teasels. (See Figure 1) These fibers form a soft cushiony layer on one or both surfaces of the felt. However, even in a heavily napped felt the nap comprises only about 1½ per cent of the total felt weight.

2. **Cover**—In the fulling, washing and drying operations of felt manufacture felt fibers are raised uniformly from the woven fabric forming "cover." Felts finished with this thin layer of fibers covering the weave of the fabric are called "napless" felts.

3. **Singed Felts**—These felts are first napped and then with a gas flame the nap is either cropped to a uniform height or is burned off completely. (See Figure 2 for a comparison of napped, napless and singed felts.)

Equipment Used

Figure 1 shows several individual teasels which are mounted on a large teasel cylinder. By countercurrently rotating this cylinder against the moving felt a nap is raised. Of course, the degree of nap will vary with the contact time and is adjusted for particular paper machine requirements.

ABOUT THE AUTHORS

James R. Platt, chief designer for Huyck Felt Co. is responsible for applying the new Huyck Felt constructions and chemical and mechanical treatments to papermakers felts.

Thomas M. Alexander, assistant chief designer, has been with Huyck since 1951. His broad experience has made him one of the leading men in engineering successful designs for new papermaking developments.

Traditionally only the narrow mechanical shear was available to trim the nap. Huyck's development of the full-width singer, however, provided a more dependable and effective device for uniformly trimming nap length to any desired level. (See Figure 3.) This device can also be used for complete removal of nap. In any case a full-width vacuum cleaner is used to remove the singe dust as well as any loose fibers on the felt surface. (See Figure 4.)

Figure 1—Closeup of vegetable teasels used for napping felts.

Why Napping?

There are several opinions on why some felts should be napped. Better finish, more openness and better appearance are the reasons most commonly encountered. Let's discuss a few typical examples of the effect of nap on performance.

Case 1. Several years ago a cylinder board mill running white patent coated at 270 f.p.m. noticed that the finish actually improved after a week's use had worn down the nap. Based on this a napless felt was supplied and improved finish was noted from the start.

Case 2. A cylinder board mill making fine folding grades at 300 f.p.m. has experienced a pronounced nap mark. By supplying this mill with napped felts, singed to have no fibers longer than ⅛ inch, marking disappeared.

Case 3. In New York State a cylinder board mill running heavy weight (.030-.060) coarse grades was experiencing drop-offs. This was due to the increased thickness of the air film on the heavily napped felt. By cropping the nap, the air film was reduced and drop-offs remedied.

It should not be assumed from the above examples that all napping can be eliminated. This is not so. There are several areas where nap is essential. For instance, in high-speed tissue manufacture on a Yankee machine the wet felt usually must be napped to prevent sheet following on the wet felt. Machines making fine papers that use felts in the fine wet, superfine wet, extra superfine wet, plate press and super press classes almost always require nap. There are some exceptions but most of these machines need a uniformly thick napped surface to cover the basic

woven structure of the felt and provide good finish. The fine felts in the press classes used in the manufacture of coated papers such as book and catalog are also usually napped.

Effect on Hair Shedding

As was mentioned before, napping raises individual felt fibers from the felt and these are more easily shorn off during running. Because of this, whenever possible napping should be avoided where hair shedding is a problem. However, if napping is necessary several effective remedial measures are available. The Huyck Huyvel process with its modified yarn and felt constructions serves this purpose very well. Here the special finishing and vacuuming equipment removes the loose fibers previously troublesome during the first few hours of felt life. Furthermore, the better anchoring of the fibers assures a minimization of hair shedding both initially and throughout the life of the felt.

The relationship between hair shedding and nap has been demonstrated at many mills. Frequently hair shedding and shankering (build up of bits of stock in nap to form a tiny pigtail) are overcome by lightly napping the felts to break up the "cover" and singeing the nap down to the level of the yarns. In all cases the singeing is followed by a thorough vacuuming of the felt. The Huyck full width vacuum cleaner is very powerful and completely removes all singe dust and loose felt fibers. Its use in combination with the Huyvel process and other special finishing techniques have virtually eliminated both early and late life hair shedding on critical grades.

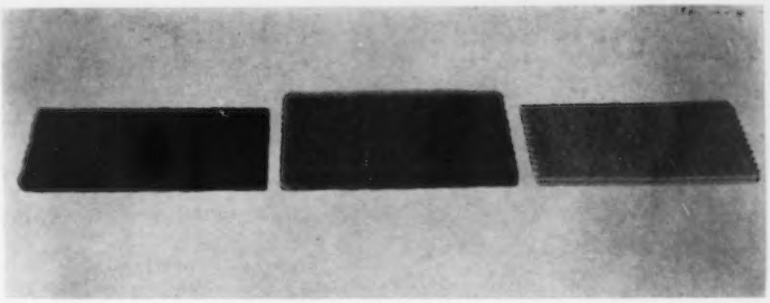


Figure 2—Surface characteristics shown for (left to right) no napped, full napped and full singed felts.

Special Finish Requirements

1. The pickup felt used on the Yankee tissue machine requires some special finishing. It must be hard singed to produce the level surface that aids sheet pickup. By removing all fuzz and singe dust fast starts and high speeds are assured.

2. Thin lightweight porous felts are used on Edwards attachment machines. They must be given an even harder singe than the Yankee pickups. A completely hair-free surface is needed to prevent cutting of the sheet by felt fibers and to provide a completely bare surface.

3. As mentioned previously, the Yankee wet felt should be given a uniformly cropped nap. Too little nap will cause sheet following and too long a nap will become stringy and cause picking. Many Yankee machine operators brush an old wet felt when starting up a new pickup. Such brushing actually naps the wet felt on the machine and prevents the sheet from following the wet felt.

4. Most cylinder top felts are made napless and singed to provide a bald surface. This is effective in overcoming picking and hair shedding.

5. On felts making cigarette paper as well as those running matrix it is essential that they have a heavy short nap that is both dense and durable. In fact, on cigarette paper especially, when the nap has been worn off the useful life of the felt has ended.

Summary:

Now that more is known about the exact function of nap, felt finish can be selected on a more scientific basis. Consideration must be given to the finish, openness and cushion required as well as to the possibility of a hair problem. Where hair shedding has been troublesome the Huyvel process has helped in many mills. Regardless of the felt finish required it is most important that these needs be met when the felt is first started. After these critical first few hours a properly engineered felt will continue to perform well.

Frequently a small change in felt finish can result in marked improvements in felt performance.

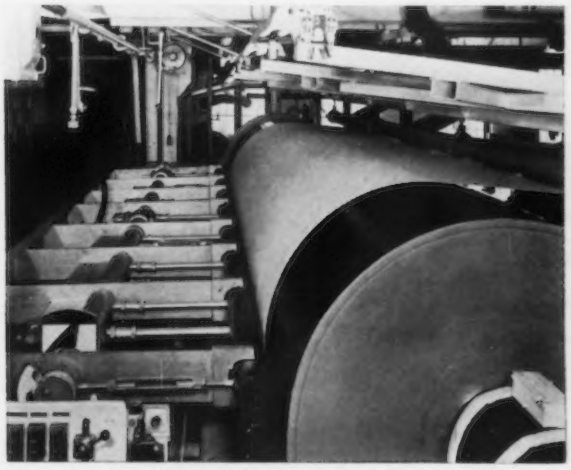


Figure 3—Huyck's full width singer in action.

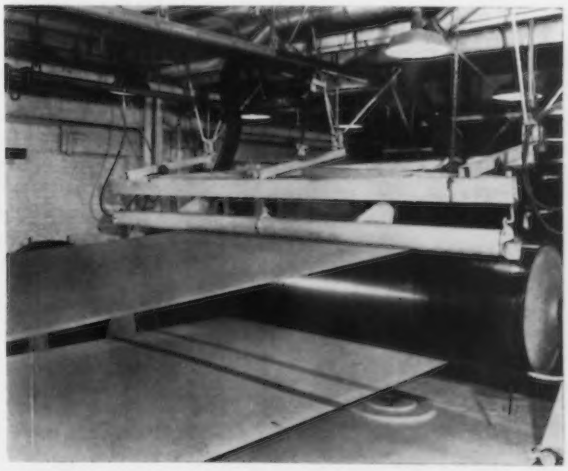


Figure 4—Vacuum-cleaner removes dust and loose fibers.

Factors in Wire Life And Suction Box Cover Wear

The effects of speed, vacuum, wire length, cover material and loading materials are discussed together with recommendations for extending wire life and reducing box cover wear.

M. Boiteux,
Director of Manufacturing,
Les Toiles Metalliques de Rai Tillieres,
Paris, France

Wire wear at the suction boxes of fourdrinier machines is due to a number of factors which appear to be as follows:

1. Wire speed;

2. Proportion of the wire load carried by the covers;

3. The grit carried by the covers which is partially related to *2* above.

For each box there are also other variables of applied vacuum, texture and hardness of surface cover and the surface area.

Suction Boxes

The vacuum per unit of area in the first boxes should be low, so that the wire side of the sheet will not be adversely affected; therefore, these boxes should have a large suction surface to obtain this low vacuum per unit area. The surface of these boxes being lubricated by water results in a reduced friction coefficient and the wear on the covers is low.

The dry line of the sheet where it contains practically no more free water is easily seen on the wire and this can be varied by changing the drainage at the breast roll of the machine, by omitting some table rolls, or increasing the vacuum on the first boxes. The boxes located after the dry line act under more severe conditions and it is these boxes which are of greatest importance in the matter of wire wear. The water removed by these boxes passes directly from the fiber mass to the vacuum system of the suction boxes without lubricating the load bearing surface. The friction coefficent being high because of the lack of lubrication, the wear will be much higher. This wear is proportional to the speed and is a function of the vacuum per unit of surface of these covers.

Speed

At a constant pressure, the wear of the two parts in contact is proportional to the relative movement of the surfaces in contact: for a given time, the wear is proportional to the speed. To determine the effect of the wire on box cover wear, two cases should be considered. The first one being speed variation and the second, wire length.

In the first case the amount of material removed from a suction box cover by the wire and abrasive material is equal to KV where V is the velocity. Similarly for wire wear, the amount of material removed from the wire knuckles is proportional to the speed.

To show the effect of wire length, consider a machine operating with the same speed and suction box conditions, but with different wire lengths. The following example compares box cover and wire wear when the wire is worn out.

The wire wear is proportional to the number of revolutions that are made; i.e. equal to $K N_1$, the number of revolutions N per unit time being equal to $\frac{V}{L}$. Life of the wire is then proportional to its length. In both cases, the result is that the boxes are worn in proportion to the wire length when the wire is changed.

On a machine with a wire length of 75 feet running at a speed of 900 f.p.m., operating problems were encountered and so it was decided to raise the wire length to 110 feet. The number of revolutions per minute decreased from 900/75 to 900/110, this being in proportion to the increased length. For the wire life on this machine, wear of the boxes then decreased in proportion to the revolutions which are equal to the ratio of the lengths.

Vacuum

Since the first boxes receive a sheet which still contains a large proportion of free water, there should be a lower vacuum per unit area of box. Too high a vacuum affects formation and in addition increases the amount of fiber and loading material lost. The volume of water removed at these boxes is important, thus a high removal rate is necessary, and it has been found that vacuum can be reduced without affecting this removal rate and without a further increase in area being necessary.

On the following dry boxes where density is progressively increasing, the vacuum per unit area has to be higher, but the ratio between the vacuum surface and the carrying surface should be lower than on the first boxes to minimize wear. The amount of the vacuum is very important to the wear and any lack of balance will bring localized wear of the box under the higher vacuums.

For a wire table with nine suction boxes, the following vacuums in inches of mercury are suggested.:

On boxes 1 and 2—from 0 to 1 inch Hg.

From a paper presented under the title, "The Influence of Wire Characteristics and Machine Speed on the Wear of Suction Box Covers," at the 10th Conference of L'ATIP, a French association for pulp and paper technical personnel. Translated by Miss Lucille Dugas.

On boxes 3 and 4—from 2 inches to 4 inches.

On boxes 5 and 6—from 4 inches to 5 inches.

On boxes 7 and 8—from 5 inches to 8 inches.

On box 9, the same amount as box 6.

In many cases, the vacuum on the last box is equal to or greater than that on the preceding boxes. However, this is not recommended since the amount of water in the sheet is very small and the cover of the box has very little lubrication. Also the friction coefficient is increased and the wear is greater than on the first boxes. In many cases it would be preferable to increase the vacuum on box No. 6, set the maximum on the 7th box and then reduce the vacuum starting at box No. 8.

For increased wire speed, in order to remove through the boxes the same amount of water per unit of product, the vacuum surface should be increased instead of the total vacuum; the carrying surface will also have to be increased proportionally. This can easily be done with new paper machines. For speeding up existing machines, the use of joined suction boxes and utilization of the space up to the couch offer two possibilities for increased suction area.

Carrying Surface

This can be studied by considering a wire of 1 meter width:

a. For a 20 cm. wide box having a vacuum surface of 35 per cent, i.e. 700 cm.², with a vacuum of 2 meters of water—the total pressure on the box is 140 Kg., i.e. 107 gr. per cm.² of carrying surface;

b. For a box with the same width having a vacuum surface of 40 per cent, i.e. 800 cm.² with the same vacuum—the total pressure on the box is 160 Kg., i.e. 133 gr. per cm.² of carrying surface.

The wear on the second box will be much higher, probably in a proportion relating to the pressure ratio on the two boxes. This example shows how important the relation between the loading surface and the vacuum surface of the suction box covers can be.

Loading Materials

All loadings are abrasive and this property more or less depends on the fineness and degree of purity. Trials have been made to determine which loading materials were more or less abrasive. No conclusive results were obtained although it appears that it is essentially the size of the loading particles which has the greatest influence on the wear.

The percentage of the loading material used also has a great influence on suction box cover wear; the higher the loading, the greater is the amount in the white water and thus the actual amount introduced in the headbox is higher and the wear of wire and suction boxes is higher in proportion to the effect in amount of loading recirculated.

Cover Type

There are two important classes of boxes: the drilled cover and the slotted cover. As wire manufacturers we consider the slotted box decreases the wire life not only by wear, but by hammer-hardening of the metal due to the flexing of the wire between the bars due to the vacuum applied. These boxes are also one of the most frequent causes of seam failure due to the effect of folding which occurs at every passage over the suction zone. The use of the drilled cover is advised on all the boxes with high vacuums, i.e. for all dry boxes.

Considering the preceding example of a machine with nine boxes, by utilizing slotted boxes in the first two or three positions, a higher ratio of vacuum surface to loading surface is obtained than is possible with drilled boxes.

Materials of Construction

Slotted boxes can be of wood or a composite material of textile or fibers combined with plastics or various resins. These materials should be wear resistant and should have a smooth surface so that loading particles or grit carried by the water and sheet do not become imbedded. Wood bars should be of hard wood so that during the wire life their surface is not deeply cut by the passage of the filaments of the wire. The bars of synthetic material should also be hard enough to resist the same wear and not cause too high maintenance costs. The choice between these two materials is strictly an economic question.

Metal bars are not to be excluded; in some cases their low coefficient of friction and the fact that their surface is hard and will not pick up any particles, gives them an obvious advantage. The maintenance of metal boxes is more difficult; if a non-ferrous material is chosen, adjustments can be made easily while stainless steel which is sometimes used can cause difficulties in operation.

Drilled suction boxes can be made of synthetic material as previously mentioned or of end of grain hard wood.

Advantages of Drilled Boxes

The suction distribution on the whole box surface causes metal fatigue of the wire by hammer-hardening which was mentioned for the slotted boxes. The distribution of holes, their dimensions and form is still open to discussion. But whatever the form, the holes must be distributed in a way so that, during the passage of the wire, the same suction area is covered by each section of the wire. Oblong holes are frequently adopted; when these holes are of large size and with the long axis perpendicular to the machine direction the wire may be flexed and this deformation sometimes leaves a mark on the sheet; when they are inclined the wire mark is not only increased but in addition a high wear rate can occur on the edges due to the wire following the larger hole depression.

One case is known of a machine equipped with boxes where the holes were all inclined in an opposite direction to the axis of the machine; following this reverse inclination the wire wrinkled because of the inclination of the two suction zones. To prevent this occurrence, it is recommended alternating the boxes so that the hole inclination is opposite on following boxes. The covers with oblong holes have a relationship between carrying and vacuum surface which is important for the first wet boxes.

For the dry boxes, it seems preferable to adopt circular perforations.

The general criteria for suction boxes should be as follows: (1) Low friction coefficient; (2) Homogeneous surface; (3) Uniform wear resistance so that slots and ridges do not appear during the life of the wire; (4) Smooth, dense material to prevent the imbedding of solid particles.

It has been shown that wear depends on two factors: the pressure

For increased wire speed, vacuum surface of the suction boxes should be increased instead of total vacuum; carrying surface should also be increased.

and the speed. Elementary calculations show how much the pressure can affect the cover of the boxes by the wire, and it is concluded that if the boxes are not of extremely hard wood there is a scratching of the surface due to the effect of the vacuum and the increase in the coefficient of friction.

Surface Scratches

Scratches can occur very rapidly when the covers of the boxes are not hard enough due to high contact pressures when the wire is started. This occurrence is extremely serious because the wire knuckles follow naturally in the grooves or scratches and they become progressively bigger and the wear rate of the cover increases markedly. To delay surface scratching several methods are available:

First of all, wire manufacturers give to the warp wires a small sinusoidal amplitude of ± 1 to 2 mm. with a frequency which varies from 1 to 3 m.m., depending on weaving. This amplitude is theoretically sufficient so that the wire knuckles touch all the box surfaces so that no grooves appear.

Another method consists in offsetting the warp wires from 5 to 10 mm. at the wire seam. This displacement gives the same results as the first case. The natural movement of the wire is opposed by the tensions which are applied on the surface of the boxes due to the wear.

The speed of wire movement is of considerable importance to the even wear of the covers; and on modern machines the oscillating suction boxes give a much more even wear than either of the two wire manufacturing methods.

There are three oscillating systems for the boxes;

Linear transverse oscillation. This type is the most common currently used. The disadvantage of this system is that a dead point exists where the direction of movement is reversed and this interruption is sufficient for the warp wires to dig grooves in the cover which become bigger at every reversal. When the grooves are sufficiently deep, the moving box actually carries the wire with it in transverse movement and thus the wear is greatly increased as well as more possibility of wire damage.

With this system the boxes are generally moved in pairs so that half of the boxes are moving in one direction while the other boxes which are alternate with the first mentioned, move in the opposite direction. In such a system of oscillating boxes, it is necessary to study the cam profile so that a rapid reversal is obtained. It has been often noticed that these installations were rapidly put out of service or were subject to such a play that the movement was not significant. These cams should be studied and given large dimensions, so that this play is avoided.

The displacement, i.e. the number of oscillations per unit time is also very important; slow movements of 2 to 10 oscillations per minute are not efficient and it is advisable to adopt an oscillation rate of 30 to 60 per minute. This relative movement of the boxes has no influence on wire wear.

Axial oscillation: In this system the boxes are oscillating around a supposed vertical axis situated in their geometric center; grooves can also appear at the end of the boxes with this method since the interval of time to cause the reversal in motion is very long.

Circular oscillation: The ends of the box are attached to two handles turning in an opposite direction, 180° out of phase. Each point of the box is in motion with a gyratory movement.

The movement of this system can be broken down into: a transverse motion and an angular oscillation. The transverse motion reaches its maximum speed when the axial oscillation passes through the point of inversion and the dead point. If a parallel line to the axis of the machine is considered, the line on the boxes where the warp wires wear on fixed boxes, is always in movement for the system of circular oscillation. This very important advantage is realized by using this system on high speed machines.

Suction Box Setting

Levelling: When the boxes are not level, the wire is carried on the higher parts, in particular on the apex of the angles. Levelling can be easily obtained by suspending the boxes on small beams; this is more accurate than when the box is on the beams of the wire table.

Rigidity: It is not unusual to see boxes vibrating and sometimes oscillating; the effect on the wire is serious and should not be tolerated.

Suction: A lack of balance in vacuum distribution is often the cause of grooves in one of the boxes. A correct adjustment cannot be obtained by depending on the visual surface of the sheet; it is absolutely necessary to have a vacuum gauge on each box.

Maintenance

An inspection of box conditions should be made after every wire change; all of the scratched sections should be removed by a careful planing of the top. After this operation, the planing should be severe enough so that no uneveness occurs which could cause pressure irregularities, and thus wear. The longitudinal unevenness is especially serious since it creates a difference in the levelling from one box to another. The wire life very often depends on the suction box levelness.

When a new wire is put on a worn box, the wire knuckles are blocked up in existing grooves and the wire then wears out, not on a horizontal line, but following the profile corresponding to the shape of the grooves (it is not necessary for the grooves to be over the whole surface, even a ridge of an unlevelled box can be the cause).

Wear by striation is easily found by lighting the boxes tangentially. Bright striations are formed which are characteristic of this type of wear. The consequences of striated or fluted suction box covers are:

1. Fast wear of the wire;
2. Breaking at the seam;
3. Formation of wrinkles caused by the stopping of the wire, since it cannot follow the wire guide;
4. Wet spots.

This last phenomena appears when the seam passes or the guide roll moves causing the wire to move out of the slots, thus losing contact with the box covers; air moves into the contact zone and drainage is modified so that the sheet has a wet zone across the width and some of the fibers stay in the wire. These can cause machine breaks and very often shorten the life of the wire.

The consequences of a high friction coefficient due to the presence of grit, striations or covers of a light material which deflect must also be emphasized. The work input is raised proportionally, the power consumption increases, and the wire which carries the power is under increased tension. In the worst cases the wire can rupture, or if inside this limiting factor, will result in excessively increased wire and cover wear. The resistance may also cause sliding of the wire on the drive roll and results in an extremely fast rate of wear.

Defeatism—Let's Bury It

This major consumer of waste paper states there is a future for this if dealers take a positive attitude. He points out their serious lack in merchandising efforts such as salesmanship, market research or advertising.

D. W. Bergstrom,
Vice President,
Bergstrom Paper Co.,
Neenah, Wisconsin

Somebody has set about scaring the hell out of this country. Gloom, doom, pessimism prevail. Some of us have moaned and groaned and complained so much that we're believing it ourselves and influencing others to think the same way. In 1932, F.D.R. said "We have nothing to fear but fear itself." That statement is just the opposite of the defeatism pervading our country today. It seems to me that all of this talk about how bad conditions are; record unemployment, 50 per cent operations in the steel industry, overcapacity in the paper and paper stock industry, etc., etc., is going to have us convinced that we are in a depression. Yes, somebody has us running scared. Now, a good scare on occasion keeps us alert. A scare on occasion improves our driving. But scare, after scare, after scare, and any one of us would put the old gas-eater back in the barn and forget about going anywhere.

Here's a current quote from a business magazine: "Some businessmen are sitting tight—they're scared. Others howl, moan and beat their breasts. Everyone is concerned. Some business men are so busy worrying trouble out of last year that they're making trouble for this year. And they're letting future big business opportunities slip away while they look backwards."

During the inaugural address, we heard the new president say: "Don't ask what the country can do for you; ask what you can do for the country." The thought neatly transposes to the paper stock business. Ask what you can do for the customer. Even better, find out what you can do for the customer.

Salesmen Don't Call

Here is something of a key to my thoughts. During an average year, the people who man the front lines of our purchasing department interview 1,200 sales representatives. These sales representatives earn for their companies about 56 cents of every sales dollar Bergstrom Paper Co. takes in for its products; and paper stock uses 31 cents, or 55 per cent of our total purchases. We think our purchasing people are some of the best in the business. They don't lightly throw away that 56 cents of our dollar. In some respects, they're experts in every operating facet of our company. They know our daily requirements, and they stay abreast of our long-range requirements and plan ahead and contract ahead. Every year, as we said, some 1,200 eager, red-hot sales people call on our purchasing department and sell us chemicals, machines, pulp, paper stock . . . well, literally thousands of things by the pound, the piece, and the freight car load. These are things we need to stay in business.

Some of these things we didn't know we needed. The salesmen sold us on what the item could do for us. And, because of many new things and many new procedures, we are today doing a better job of business. Some particular salesmen have taken care to know all about us before they attempted to sell us anything. Some were simply order takers. Some, alas, just wasted our time and theirs.

But of all the things we buy and use, paper stock is the largest item of all. And, believe it or not, if the thousands of visitors to our company every year, our paper stock suppliers are seldom, if ever, among them.

At Bergstrom, as in most companies, the production vice president issues monthly production reports. Half of every report is devoted to machine trials, to paper stock trials. The same reports note trials under our supervision in Canada, Maine, Connecticut, New York. Our people are all over the map, daily, developing better deinking and bleaching methods. We are not alone; in fact, we of Bergstrom are typical of your paper stock consumers. We're looking for tomorrow's methods today, tomorrow's raw materials today, and building our company today for a greater tomorrow.

But . . . there has only been a very small percentage of our paper stock merchants who call on us regularly to see what we're doing now . . . to see what our needs are now . . . to nose around . . . to look into our future with us. Of 1,200 sales people calling on us, less than one per cent represents our paper stock dealers. Only one per cent from your industry serves us as the other 99 per cent supplying other items serves us, and that one per cent is getting 55 per cent of our purchasing dollar. **Believe me, our pulp suppliers, your competitors, are really calling on us.**

(Continued on page 36)

" . . . of all the things we buy, paper stock is the largest item. And, believe it or not, of the thousands of visitors to our company every year, our paper stock suppliers are seldom, if ever, among them."

Cady Exact Dead Weight Micrometer

BUILT FOR PRECISE TESTING

Cadytest Instruments are designed for accuracy in determining or comparing thicknesses, basis weights, or bursting strengths. They are available in stock models, or specials for specific tasks.

Write for Brochure & Prices

E. J. Cady & Company
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Cady Burst Tester with Automatic Uniform Cycle

Growth in Use at Bergstrom

How many times have you been able to upgrade your product to a higher profit return because of technical or other advances of your customer? Let's look at a few examples. In 1946, Bergstrom Paper Co. used 17,160 tons of No. 1 heavy books and magazines. That was the only paper stock grade that we used then. Today, just 15 years later, we are consuming No. 1 heavy books and magazines at an annual rate of 31,000 tons. But, and this is the important thing, we are using six other standard grades and 32 specialty grades of paper stock at an annual rate of 20,500 tons. That makes a total of 51,500 tons per year compared with 17,160 tons just 15 years ago. Does this kind of growth indicate a pessimistic future for paper stock?

Let's forget the increase in consumption of No. 1 heavy books and chalk that up to normal growth. That 20,500 tons of new grades is the interesting item. For instance, some of that figure was colored tabulating cards—they were adding to the mixed paper surplus as recently as 1949. The major portion of that 20,500 tons is in specialty kraft grades, some of which were going to the dumps, some went into mixed paper, and at best were being sold with the corrugated within the last ten years.

New machinery, technical advances, new bleaching processes, of course, contributed to the up-grading. But, the biggest contributor was good paper stock merchandising.

Those figures are for just one consumer. I think they point out that there are many opportunities available today and tomorrow for optimism in our paper stock industry.

But, these opportunities must be ferreted out.

Too Busy to Sell

We consumers have been mighty lax in keeping our suppliers informed of our new requirements. We are entitled to plenty of criticism from our paper stock suppliers. If there is any salve for the consumers conscience, it is the fact that our supplier friends, with a few notable exceptions, have not exactly broken down our purchasing agent's door in an effort to find our "What's new in his consumer's requirements?" A typical example of how not to do it occurred in a phone call from a dealer to me just in the last several months. He had called me to sell an extra car of No. 1 book. In the course of the conversation I asked him when he was planning to visit our mill to see what we were doing now in our deinking operations. Frankly, he hadn't been at our plant for quite a number of years and he does sell us quite a tonnage of No. 1 book only. His answer: "Ded, business is too rough for me to leave my plant now. I have to be right here, on the job, every minute these days." Now, I know for a fact that when it was a seller's market he did not come to see us then either because he did not have to travel to sell his merchandise. But, gentlemen, that dealer is still selling us just one standard grade as he has for years. As I said before, that in my opinion is how "Not to do it."

This conversation is not an isolated instance. Variations of it occur frequently at our plant, and if they occur frequently at our plant, they are happening frequently at other consumer plants. I repeat, "This is how not to do it."

"I think they point out that there are many opportunities available today and tomorrow for optimism in our paper stock industry."

Market Research Needed

Why not think in terms of a perpetual user audit—continuing market research. But, as only you know your business, you will be unable to rely on outsiders for market research as can many other industries. You will need a plane ticket for some aspects of your survey, and a stout pair of shoes when you arrive. You will need a large note book and sharp eyesight. You will need compassion (because your customers have their troubles), and you will need a bit of insight for purposes of anticipation. You will return beat: tired. But, in time, you will have a file full of facts, a head full of new ideas and, if you will excuse my mixing my metaphors, a good grip on the future, profitable business.

If you know what your customer is doing, you will know what you have to do. That will make money for your customer and you!

From an address at the Paper Stock Institute of America Annual Meeting on March 13, in San Francisco, Calif.

Tile Linings
Membrane Linings
Tile Structures

Design,
Construction
and Maintenance

STEBBINS ENGINEERING AND MANUFACTURING CO.
WATERTOWN, N. Y.
Pensacola, Seattle,
Montreal, Vancouver

PJT NEWS OF SUPPLIERS

PAPER MILL SUPERINTENDENTS meet with Wisconsin Wire Works personnel to exchange ideas and discuss problems that affect both the papermaker and the wire manufacturer. Here you see Harold A. Womack, Longview Fibre Co., Longview, Wash. (second from left); Sydney T. Dolan, St. Regis Paper Co., Tacoma, Wash.; and Ernest E. Zans, Potlatch Forests, Inc., Pomona, Calif., watching Louis O. Mauthe, Wisconsin Wire Works, perform the seaming operation on a fourdrinier wire. Plant tours and discussions resulted in a better understanding of the application of fourdrinier wire in the paper mills.

Radio Corp. of America has recently appointed Southworth Machine Co. as a national sales representative for the RCA Electronic Paper Flaw Detection Equipment. The RCA Paper Inspector can detect creases, calendar cuts, holes, lumps, spots, gloss imperfections, etc. Used in conjunction with a single roll sheeter it can classify and sort the sheets according to the severity of such defects.

The RCA Electronic Paper Flaw Detector, which consists of only one inspection head and one control rack, can handle paper at speeds of up to 1000 feet per minute. It is equipped with a built-in lamp alarm and test signal generator for checking the performance of each channel at all times. Complete transistorization and use of plug-in modules assure high reliability and ease of maintenance.

Principal advantages to users are: substantial savings in cost of inspection, as well as far greater dependability and accuracy in detecting defects and grading the stock.

Hercules Powder Co. has announced four new managerial assignments in its Paper Makers Chemical department.

The new assignments are: Arthur E. Drake, director of development; Robert W. Little, sales manager rubber chemicals; W. Donald Thompson, manager of sales service paper chemicals; and Spencer H. Watkins, assistant manager of sales service paper chemicals.

A native of Cincinnati, Ohio, Dr. Drake joined Hercules in 1942 as a research chemist and was assigned to the company's research center near Wilmington, Del. After serving in various sales supervisory posts, he was named a sales manager in the PMC department in 1955. He received his undergraduate degree at Miami (of Ohio) University in 1940 and earned M.S. and Ph.D. degrees at Western Reserve University.

Dr. Little's initial assignment after joining Hercules in 1948 was that of research chemist at the firm's research center. He served successively in the Sales Research Division, in the PMC department, as manager of the Akron branch office and, since 1958, as assistant sales manager of the PMC Department's rubber chemicals division. Dr. Little was graduated from Rutgers University in 1937 and received his Ph.D. at Columbia University in 1941.

Dr. Thompson joined the company as a research chemist in 1944. After serving in supervisory capacities at the research center, he became sales manager of the department's miscellaneous paper chemicals division. He earned his undergraduate and M.S. degrees in chemistry at Emory University and was awarded his Ph.D. at Harvard in 1936.

Dr. Watkins joined Hercules in 1950, shortly after receiving his Ph.D. degree in organic chemistry at the University of Wisconsin. After serving as a research chemist and research supervisor at the Hercules Research Center, Dr. Watkins became a senior technical sales representative for the PMC Department in 1957.

F. R. Gagnier

O. W. O'Neill

A. E. Staley Manufacturing Co., Decatur, Ill., corn, soybean and chemical processing concern, has named Owen W. O'Neill chemical sales supervisor.

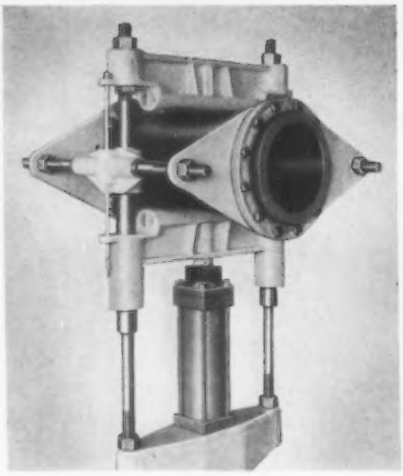
Nopco Chemical Co., Newark, N. J., and Richmond, Calif., has named F. Russell Gagnier sales representative in the Pacific Northwest for its complete line of Industrial Division products.

Formerly Nopco's sales representative in southern California, Mr. Gagnier has been in technical sales and service with the Industrial Division since 1950.

Prior to his southern California assignment, Mr. Gagnier had covered northern California and New England territories for the Industrial Division. In his new assignment, he will service the pulp and paper, textile, paint and varnish, plastics, and adhesives industries.

Mr. Gagnier joined Nopco in 1948

AUTOMATED *Hydral-60* PINCH VALVE SYSTEMS



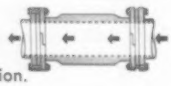
Controlled circuitry for any operating requirements

- The Massco-Grigsby Hydral-60 System consists of one or more pinch valves with a single automatically operated hydraulic pump.
- Hydraulic pump may be operated by electric motor or by air from normal plant supply system.
- Valves may be the same or different size.
- Valves in the system may be operated simultaneously or independently.
- Control valve may be manual or solenoid.
- Valves are self-supporting and may be operated in any position from horizontal to vertical.
- Valves may be coordinated and interlocked with other plant equipment to automatically control tank levels, rate of flow, etc.
- Valves may be independently controlled for normal or rapid closure.
- Valves may be held fully open, fully closed, or at intermediate positions.
- Remote control to meet individual requirements.
- Controls may be included for automatic emergency operation.
- 3" to 14" I.D. sizes, with 50, 100, and 150 psi line pressure ratings.
- Temperatures to 200° F.

Advantages of Massco-Grigsby Pinch Valves

- Rubber, neoprene and special compounded rubber sleeves *for corrosive and abrasive pulps and liquids.*
- Patented "hinged" sleeve. Recesses serve as "hinges" during compression; reduce strain and permit tight closing.

- Unobstructed flow eliminates high friction loss and prevents contamination.



- Split flanges and patented Flex Seal ends assure perfect seal.
- Rugged, heavy duty construction for most severe service and long life.
- Cannot leak or stick.
- No working parts in contact with pulp or liquid; no packing glands.

WRITE FOR NEW CATALOG NO. 609

The Company that cares enough to give you the best!

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LICENSED MANUFACTURERS AND SALES AGENTS in Canada, Australia, Sweden, England, South Africa
Sales Agents in Mexico, Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the U. S.

as a development chemist working in the fields of insecticides, paper and leather. He graduated from the American International College with a bachelor's degree in chemistry in 1948, and subsequently took additional courses in chemistry at Colgate University and in marketing at Rutgers University.

B. W. Ellis

A. E. Hauck

H. D. Wilson

G. L. Moyer

Buffalo Forge Co., Buffalo, N. Y., has appointed three vice presidents of Buffalo Pumps Division.

Bruce W. Ellis has been with the company since 1935 and serves as chief engineer.

Adam E. Hauck, named vice president of sales, has been with the company since 1923 and became division sales manager in 1958.

Henry D. Wilson, appointed vice president of manufacturing, started with the parent company in 1927.

Stanley Steel Strapping, division of The Stanley Works, New Britain, Conn., has appointed Gilbert L. Moyer sales representative in the Cleveland territory.

Since joining Stanley, Mr. Moyer has received intensive factory and field training. His previous employment includes several years of sales engineering experience with metalworking and materials handling companies in the Cleveland area.

Huyck Felt Co. has announced the company's plans for a two million dollar plant improvement program. Frederick Soderberg, general manager, in a statement, noted that the program was half completed during 1960. Huyck Felt Co. last year,

Large VOLUME Ventilation in Low-Cost "Packages"

'BUFFALO' PACKAGE PROPELLER FANS

- *Low First Cost*
- *Low Installation Cost*
- *Peak Efficiencies*
- *Ideal for Ventilating Large Open Areas*
- *Sizes for All Needs*

When you need low-cost ventilation for a small area—or for a huge plant... 'Buffalo' Package Propeller Fans are the answer. Sizes from 24" to 144". Capacities up to 250,000 CFM. Unusually quiet performance is assured by highly efficient slow fan speeds. 'Buffalo' Package Propeller Fans are ruggedly built for complete reliability in the severest industrial ventilation and exhaust service.

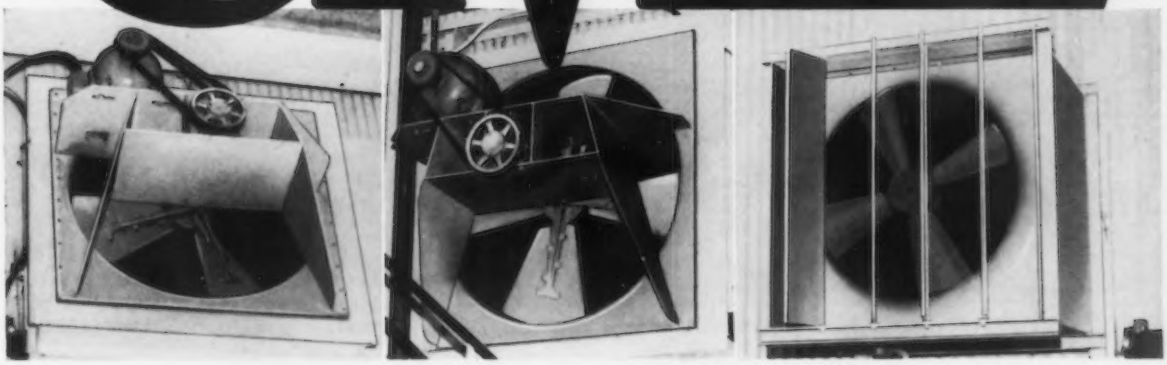
CHECK THESE SUPERIOR 'BUFFALO' FEATURES: The 'Buffalo' Package Propeller Fans shown have logged years of low cost service in a large paper mill. Note heavy-duty construction: ¼" flanged steel plate panel—⅜" gussets supporting motor and drive heavy steel bladed wheel welded to sturdy cast steel spider. These quality fans are statically and dynamically balanced and test-run at the factory.

Also available with motor-controlled louvers on inlet side of fan.

'BUFFALO' BUILT MEANS QUALITY THROUGHOUT. In these husky fans you'll enjoy the many benefits of 'Buffalo's' uncompromising attention to QUALITY. With 'Buffalo' products, you realize the true long-range economy of quality.

Ask your nearby 'Buffalo' engineering representative about the many uses for these heavy-duty fans.

Or write direct for Bulletin FM-1234.



"Buffalo"

AIR HANDLING DIVISION

BUFFALO FORGE COMPANY

Buffalo, New York

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

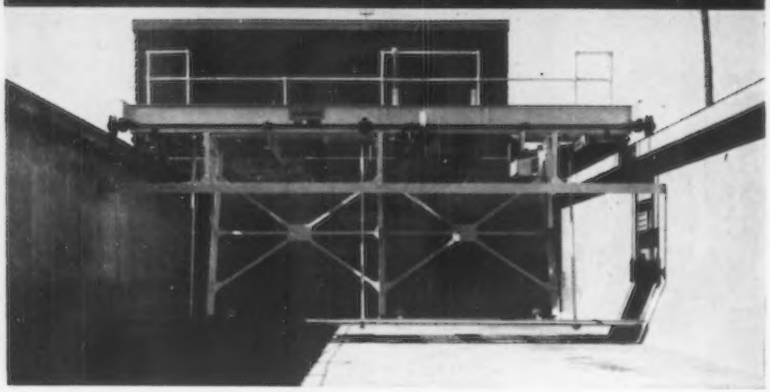
'Buffalo' Air Handling Equipment to move, heat, cool, dehumidify and clean air and other gases.

'Buffalo' Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

'Buffalo' Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

Squier Machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

HARDINGE CLARIFIERS for rectangular tanks



The Hardinge Rectangular-Type Clarifier is similar in operation to an industrial, overhead crane. It travels on two rails, on the outside walls of the settling tank, scraping settled solids to a sludge hopper at one end. A skimmer may be added to remove scum and floating material from the tank surface on the "return trip" of the Clarifier.

Advantages of the Hardinge unit are these:

(1) Settling tank installations may be made in limited space (as opposed to the circular type clarifier).
(2) Maximum use of common wall construction is possible, when there are two or more tanks involved.
(3) A single Clarifier mechanism can operate over two adjacent settling tanks (duplex arrangement) reducing equipment cost.
(4) Clarifier equipment cost does *not* increase with tank length.
(5) All essential working parts are above liquid level.

Hardinge has installed more than 80 Rectangular Clarifier units for municipal sewage treatment, industrial water treatment, and for liquid wastes at paper plants, textile mills, and oil refineries—processing in excess of 350 million gallons of liquid daily.

Write for Bulletin 35-D-14

A Hardinge 57'–10" Duplex Rectangular Clarifier operating over two 150' tanks in a refinery waste water disposal plant.

30' wide by 120' long Hardinge Rectangular Clarifier in a sewage treating plant. Skimmer in raised position.

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CHICAGO
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SALT LAKE CITY
SAN FRANCISCO
HOUSTON
LAKELAND
BIRMINGHAM

spent $1,100,000 for new equipment and plant modernization.

In 1961, the company plans to spend an additional $1,100,600 for equipment and plant renewal. Included in the program is the expenditure of $642,300 for the purchase of new weaving equipment. Other purchases to be made are equipment for the Huyck Science Center ($115,000): yarn and finishing machines $156,900), and several items of manufacturing equipment totalling $182,200.

W. E. Bright

J. W. Rohm

Rice Barton Corp., Worcester, Mass., has named William E. Bright, III, manager of customer service.

Rice Barton has combined all estimating, proposal engineering, service and outside erection in this single office to improve the handling of customer inquiries and service to the mills.

Mr. Bright has been with Rice Barton for ten years as assistant to the president and assistant treasurer. Formerly he was in the sales department of Compton & Knowles Corp., also in Worcester.

Also announced is the promotion of Jean W. Rohm to chief engineer in charge of research and development.

In his new capacity Mr. Rohm will utilize Rice Barton's new $100,000 laboratory for the development of new products for the pulp and paper industry. Mr. Rohm was assistant sales manager primarily responsible for high velocity air dryer applications and installations.

A. E. Staley Manufacturing Co., Decatur, Ill., has announced an expanded working relationship with two European corn refiners, through its wholly owned Swiss subsidiary, Staley A. G.

Chairman A. E. Staley, Jr., said the new relationship will increase the exchange of technical information between the Staley company, Glucoseries Reunies, S.A. of Alost, Belgium, and Tunnel Glucose Refineries, Ltd., of London, England. For the past several years, the three companies have been associated through

Modern Methods of Mechanical Pulp Manufacture

A new book, published early last Fall, covers comprehensively all aspects of groundwood pulp production. The author, K. H. Klemm, has a broad knowledge of groundwood manufacturing methods and has been associated with groundwood mills on both sides of the Atlantic. $5.00

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the licensing of certain patented processes, Mr. Staley said.

As part of the new arrangement, the Staley Swiss subsidiary has recently purchased a financial interest in Glucoseries Reunies, S.A., and also a minority interest in Tunnel Glucose Refineries. Neither will be Staley subsidiaries, nor will their management and policies be altered by the transaction.

This is the second overseas venture announced by Staley in recent months. A joint venture with the Permutit Co., Ltd., of London, England, was announced in August by Staley's U B S. Chemical Co. Division of Cambridge, Mass. It provides for production of "Ubatol" brand polymer emulsions at Permutit's plant in South Wales, and distribution of these products in the United Kingdom and Europe.

Dr. Pierre Fischler, formerly with the Federal Institute of Technology in Zurich, Switzerland, has been appointed sales and technical services manager for marketing "Ubatol" polymer emulsions to the floor polish industry on the European Continent.

The company's Export Division has been renamed the Overseas Division.

Earl M. Bailey, export manager for many years, continues as head of this division, with increased responsibilities for management and liaison in all of the company's overseas operations. Mr. Bailey has been with Staley 34 years, and has headed its export activities since 1928.

John R. Shroyer has been promoted to export sales manager in the new Overseas Division. He joined the Staley management training program on graduating from the University of Illinois in 1957, and had been assistant export manager since 1958.

David A. Gullette has been appointed European area manager at Fribourg, Switzerland, by the company's wholly owned Swiss subsidiary Staley, A.G., with the responsibility for coordinating its activities with those of Staley (London), Ltd., and Staley interests in jointly owned companies in Europe. Mr. Gullette joined the Staley management training program on graduating from the University of Illinois in 1954, was assistant export sales manager for three years, and had been chemical sales supervisor since 1958.

L. C. Ambrose is in charge of the Staley London office, Harry Tomkinson in charge of sales to the paper and corrugating industry in England, and Ragnar Underland is sales and technical service representative in Scandinavia.

ASSUMING new technical posts with Albany Felt Co. and Albany Felt Co. of Canada, Ltd., are, l. to r.: S. Stuart Engle, Ralph Culver and Perry Brown.

Albany Felt Co., Albany, N. Y., has named three top-specialists to newly created technical posts at its Albany plant and at Albany Felt Co. of Canada, Ltd., Cowansville, Quebec. They are S. Stuart Engle, Ralph Culver and Perry Brown.

Mr. Engle, head of the design department, has been named technical director, assuming responsibility for felt design and quality standards for Albany, N. Y., Hoosick Falls, N. Y., and St. Stephen, S. C., plant operations.

Mr. Culver has been appointed director of product quality. Rounding out 25 years of service with the company, he held several supervisory positions in the finishing department, advancing to superintendent in 1955. Last year he was appointed technical assistant to Everett C. Reed, the executive vice president.

Mr. Brown, who has headed the quality control department at Albany, will serve as technical representative to Albany Felt Co. of Canada, Ltd., at Cowansville, Quebec. He will service foreign customers and work with agents representing Albany Felt company abroad. He joined Albany Felt in 1955.

Pittsburgh Plate Glass Co., Chemical Division, has announced that arrangements have been completed to load customers' single-unit chlorine tank trucks at its Barberton, Ohio; Natrim, West Va.; Lake Charles, La.; and Corpus Christi, Tex., plants.

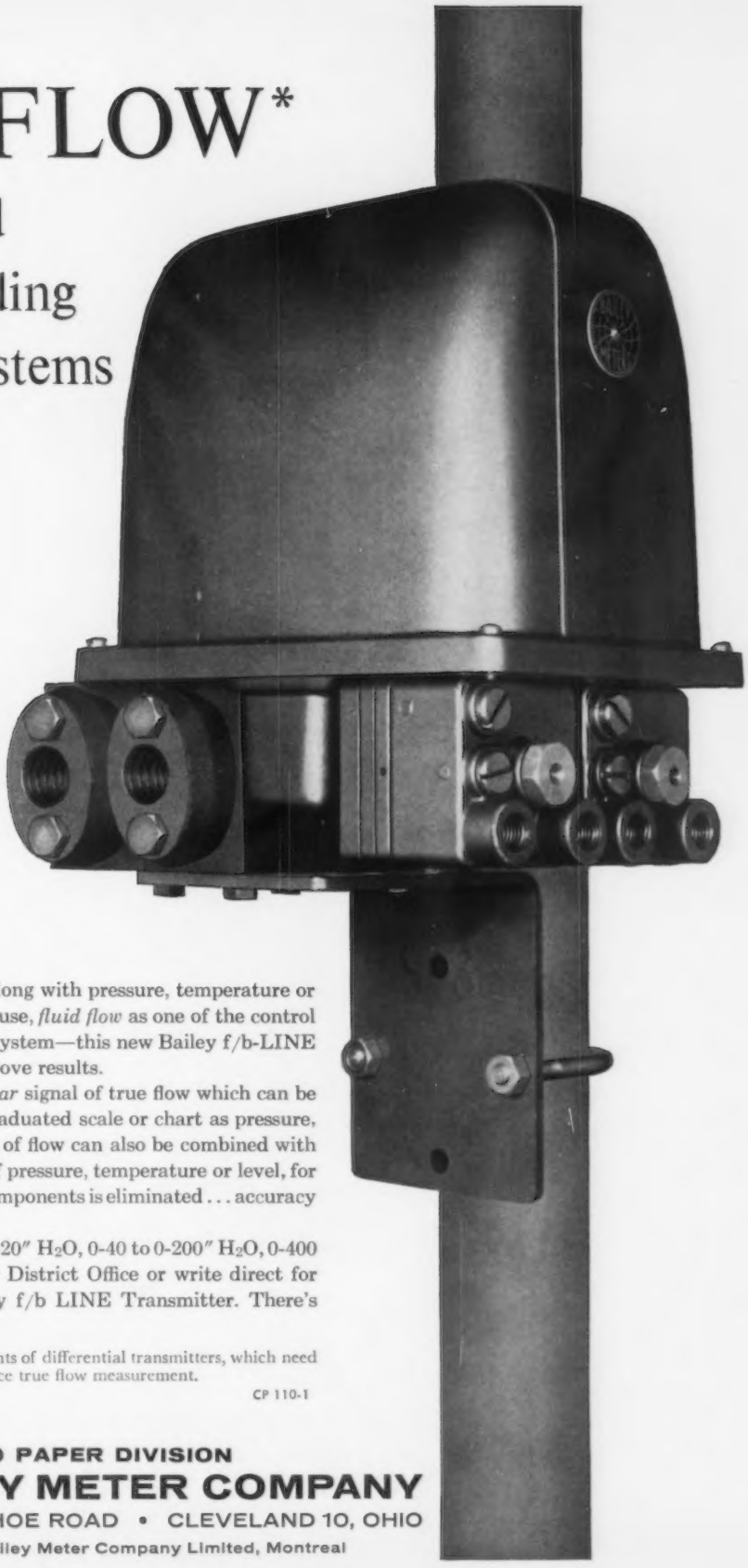
PPG's price on chlorine loaded in customers' single-unit tank trucks, minimum weight twelve tons, will be the same as their price for single-unit tank cars when car is supplied by seller, presently $65.00 per ton, with an allowance of $1.00 per ton for the customer supplying the tank truck and freight will not be equalized.

"I can't do anything with these shirts ever since you went into corrugating."

Measures

TRUE FLOW*

to simplify and improve recording and control systems



If you intend to record *fluid flow* along with pressure, temperature or level—or if you now use, or plan to use, *fluid flow* as one of the control factors in a multi-element control system—this new Bailey f/b-LINE Transmitter can simplify and improve results.

It measures and transmits a *linear* signal of true flow which can be recorded on the same uniformly graduated scale or chart as pressure, temperature and level. This signal of flow can also be combined with other linear signals such as those of pressure, temperature or level, for improved control. Need for extra components is eliminated . . . accuracy of flow reading is increased.

Wide selection of ranges: 0-4 to 0-20″ H_2O, 0-40 to 0-200″ H_2O, 0-400 to 0-2000″ H_2O. Call your Bailey District Office or write direct for complete data on the new Bailey f/b LINE Transmitter. There's nothing like it.

*As opposed to pressure-drop measurements of differential transmitters, which need external square root extractors to produce true flow measurement.

CP 110-1

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PULP AND PAPER DIVISION

BAILEY METER COMPANY

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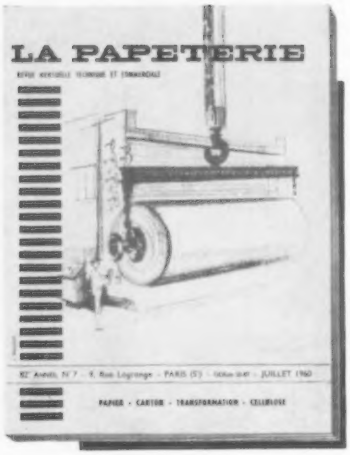
In Canada—Bailey Meter Company Limited, Montreal



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Every step in the manufacturing process undergoes the most painstaking quality control to assure delivery of steam-tight dryer rolls. Newport News can produce rolls up to 16 feet in diameter, up to 320" in length. Castings weighing up to 100,000 lbs. are machined to close tolerances and polished to any specified finish.

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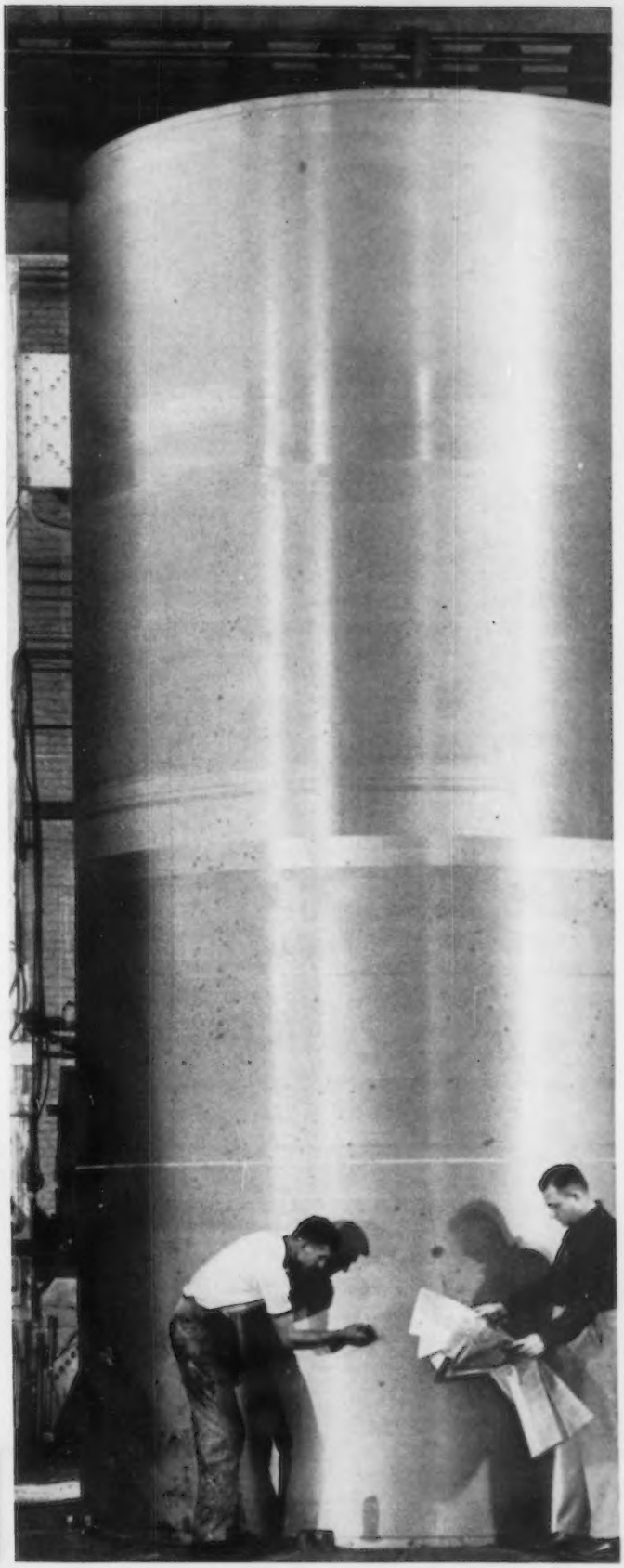
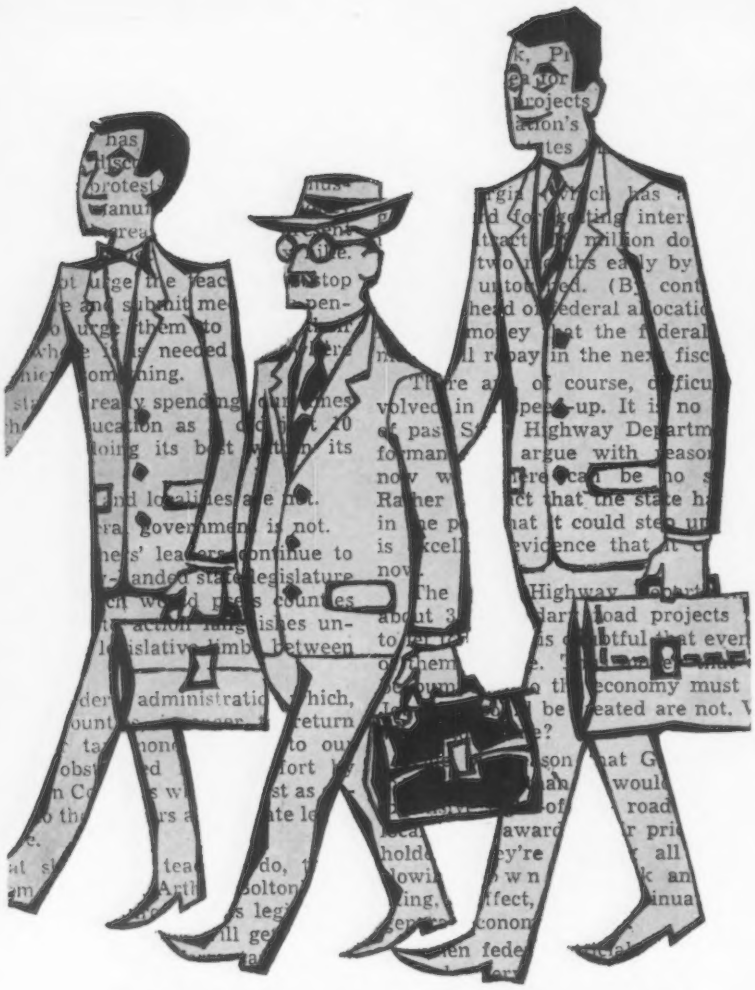
If you are considering new papermaking equipment, we welcome your inquiry.

REFLECTION OF QUALITY—The reflected image of the operator indicates the mirror-like finish of this 16-foot diameter drying roll.

Newport News
SHIPBUILDING AND DRY DOCK CO.
NEWPORT NEWS, VIRGINIA





SMART PAPER MANUFACTURERS HEAD FOR THE SOUTHEAST COASTAL 6

The states that make up the Southeast Coastal 6 offer many advantages to the paper trade—adequate timber, good rivers and a large labor force, to name only a few. Good transportation, too, with Coast Line working closely with the paper industry.

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PJT NEW LITERATURE

Ruggles-Coles Dryers, Heaters and Coolers

Includes new material on fundamentals of drying, selection of proper drying equipment, and drying economics. The cooling medium is usually air or water, or a combination of both. In some instances an inert atmosphere is used. The principal sources of the heat supply for drying are the combustion products from oil, gas or coal—and steam. Photographs and sketches, Bulletin No. 16-E. Hardinge Co., Inc., York, Pa.

Chempump Seal-Less Pumps

Gives design features and model specifications of Models C and CW "canned pumps" for leakproof pumping of corrosive, toxic, explosive, radioactive and other problem fluids. The unique feature of Chempumps, the original canned pumps, is that they eliminate the costly leakage and constant maintenance inherent in conventional centrifugal pumps. Bulletin 1052-1 Chempump Division, Fostoria Corp., Huntingdon Valley, Pa.

Structural Tubing

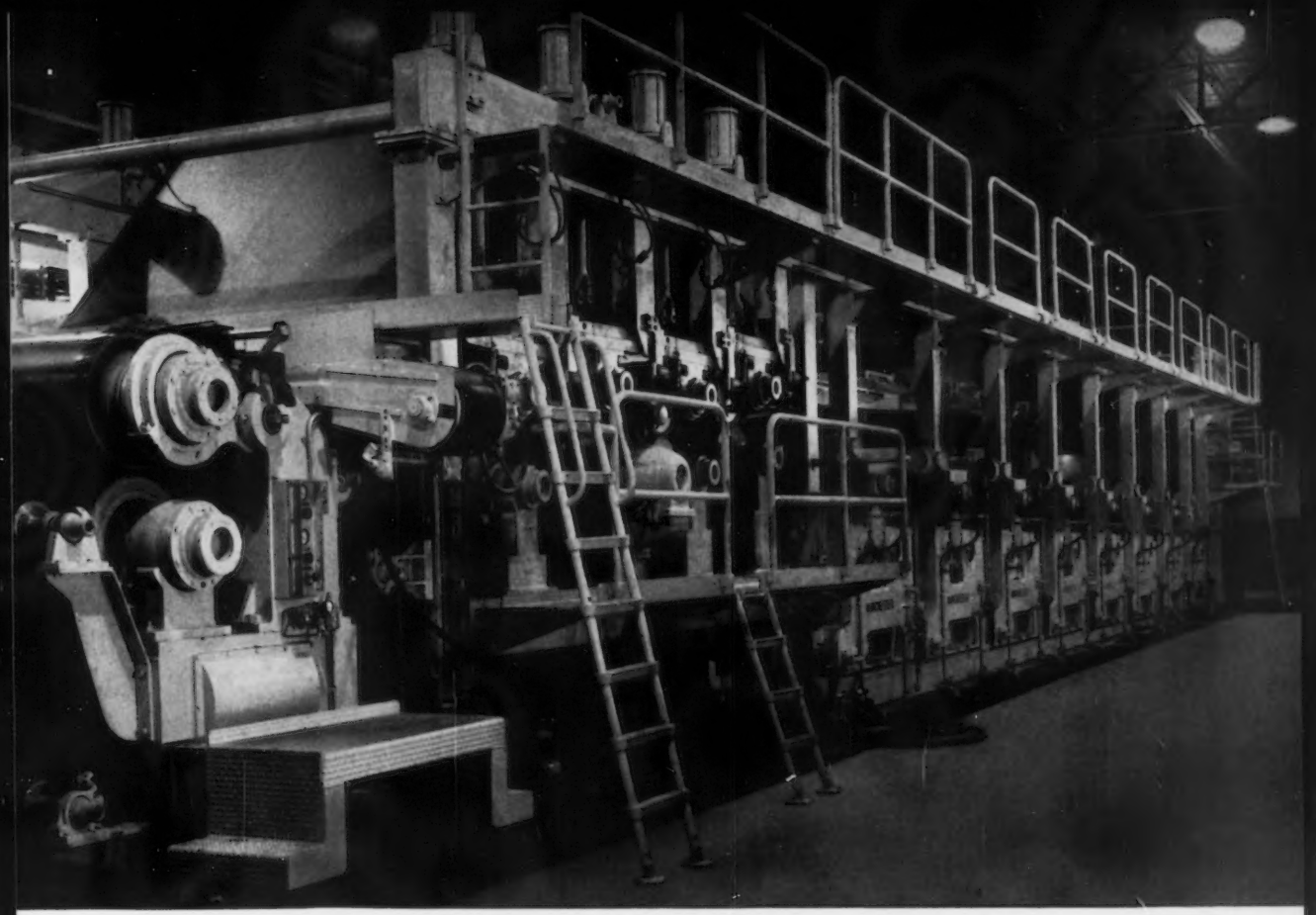
Provides engineering data on square, rectangular and round steel tubing for structural applications in the construction of buildings, machinery, furniture, fixtures, appliances, truck bodies, racks, and supports. Many advantages are listed. Bulletin 12-3. Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.

Design and Specification of Watertight Concrete

Explains a treatment of basic requirements for watertight concrete and Pozzolith's role in reducing shrinkage, bleeding and segregation to produce strong, durable structural concrete that is highly resistant to the penetration of water under normal conditions. Tells how to select the proper mix design and then establish a control, placing, and curing procedure that will assure uniform concrete in the form, free from honeycomb, cracks, and other construction faults. Bulletin P-49b. The Master Builders Co., Cleveland 18, Ohio.

E-M Vertical Synchronous Motors

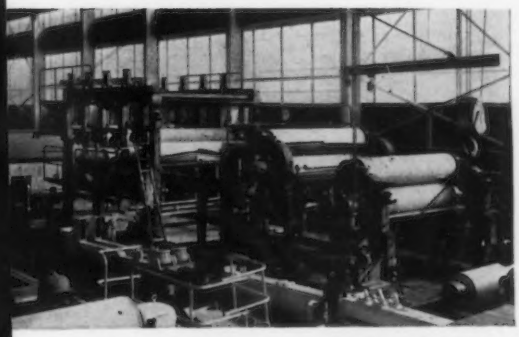
Describes line of vertical synchronous motors from 250 h.p. and up, featuring durable cage windings for permanent starting characteristics, heavy section, steel plate frame, duty selected



ALL NEW Manchester 8-cylinder wet-end installed at Pryor, Oklahoma mill of Bestwall Gypsum Co. Machine began operation just 23 days after soleplates were set.

Another Manchester machine shows its stuff

Starts-up with 47 straight hours paper production—all saleable



PRIMARY and main press section of Bestwall Gypsum machine erected in Manchester plant. All moving parts were checked out under power before shipment—an extra quality inspection Manchester makes on all machines.

From initial start-up, this modern Manchester machine ran continuously 47 hours *without a wet-end break.* Right from start-up all paper produced was saleable. This new Bestwall Gypsum installation is another typical example of Manchester's smooth, efficient handling of major projects.

Sound, experienced engineering is one important reason you can expect performance like this with all Manchester machines. Equally important are the extra quality steps Manchester takes throughout manufacturing . . . and after. For example: Manchester completely assembles all machines in its new 100,000 sq. ft. plant before shipment. Matchmarking all assemblies assures perfect fits, eliminates re-machining, saves you costly hours, even days, in installation. You get "on stream" faster . . . as Bestwall Gypsum did.

Planning to modernize or expand your facilities for higher volume, more efficient production? Call in the Man from Manchester. Write: **THE MANCHESTER MACHINE COMPANY, MIDDLETOWN, OHIO**

Manchester . . . profit builders for papermakers

THE MANCHESTER MACHINE COMPANY

bearings (leakproof and dustproof), anchored field coils and "cool-air" ventilation. The machines are available in either hollow or solid shaft construction at speeds of 1100 r.p.m. and lower, and at all standard voltages. Bulletin. Electric Machinery Mfg. Co., Minneapolis 13, Minn.

Boiler Water Columns and Accessories

Explains and illustrates the unique alarm mechanism of Jerguson Water Columns which have weights supported on hardened tool-steel knife-edges. This knife-edge balance assures positive action when the boiler water level gets too high or too low. Bulletin. Unit No. 395, Jerguson Gage & Valve Co., 80 Adams St., Burlington, Mass.

Compact Mobile Radio

Contains battery drain charts, installation information and other equipment details. The G-E Pacer, economy two-way radio equipment, weighs 10 pounds, is 4¼ inches high, 7¾ inches wide, and 12½ inches long. Units operate in 27-50 mc. and 150-174 mc. The speaker, control-unit, transmitter-receiver and power supply are all in one case. Can be installed under the dash of a car or truck. Bulletin ECR-870. Section P, General Electric Communication Products Dept., P. O. Box 4197, Lynchburg, Va.

"I'll be glad to pay you what you're worth, Chip. We're trying to cut costs anyway!"

Single Stage Centrifugal Pump

Describes No. 3195, a horizontal single-stage, end suction, top centerline discharge centrifugal pump. All pumps are interchangeable as to mounting dimensions. Goulds century-long pump manufacturing experience has produced this design which offers the customer the utmost in: Mechanical Reliability, Maintenance Accessibility, Maximum Interchangeability and Over-all Economy. Can be manufactured in any machinable alloy service conditions require. Photographs, charts and thorough story in 15 pp. bulletin. Gould Pumps, Inc., Seneca Falls, New York.

96-012 Synthemul Wax Emulsion

Describes this low viscosity, small particle size wax emulsion. Blends easily with most urea and phenolic resins, and is not sensitive to hard water. Has many uses such as paper sizing, water-repellent cartons, acoustical tile, uses where water resistant coatings are required, etc. Lists Specifications. 1 p. Bulletin. Reichold Chemicals, Inc., RCI Building, White Plains, N. Y.

Vertifoil Pulp Screen

Describes new pulp screen which adjusts to any pulp while running, eliminating downtime for changeovers. A single variable control sets the screen's foils to handle requirements of all pulps — groundwood, sulphite, krafts, etc. It is easy to install, requiring only four anchor bolts to fasten machine down and making three connections. Designed for long life, features stainless steel stock-contacting parts, finger and lip type seals and a mechanical seal to protect drive shaft, and easy accessibility through removable top cover. Bulletin. Koehring-Waterous, Ltd., P. O. Box 607, Brantford, Ontario.

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Stickle Recording Type Controller

Describes these controllers which are designed to control the pressure or temperature of steam or liquids to an accuracy of plus or minus one per cent of the total span of the instrument. A 12-inch, 24-hour, diameter circular chart records one or two ink records. The controller may either be flush panel mounted or surface mounted. Also gives details on Stickle diaphragm motor valves, now available in 15 sizes—from ½ inch to 14 inches. Bulletin 335. Stickle Steam Specialities Co., 2215 Valley Ave., Indianapolis 18, Ind.

U. S. Syncrogear Motors

Contains technical data, feature illustrations and descriptions of new line of advance-design right-angle worm gear motors, described as achieving "maximum of performance for a wide range of load requirements" due to design features that meet the rugged conditions attendant upon many right-angle worm gear applications. Shows a number of specialized models including totally-enclosed, explosion-proof, flange-mounted, single phase, and variable speed. A number of optional mounting and assembly positions are also illustrated. Bulletin F-1971. U. S. Electrical Motors, Inc., P. O. Box 2058, Terminal Annex, Los Angeles 54, Calif.

E-M Synchronous Motors

Describes a line of heavy duty, synchronous motors in rating of 600 h.p. and up. These "full power" machines, built for extra-duty applications, feature a husky, steel frame, heavy shafts, oil pressure type, sleeve bearings with quick view sight gages and high capacity starting windings. The line is offered in speeds from 500-1800 r.p.m., at 0.8 or 1.0 power factor, 60-50 cycles and at all standard voltages. Bulletin 1100-PRD-253. Electric Machinery Manufacturing Co., Minneapolis 13, Minn.

Mark V. Flow Transducer Probe

Announces the development of an improved version of the Mark V Flow Transducer for the accurate and economical measurement of fluid flows in large pipe lines. The new unit, can be installed quickly by one man. Bulletin. Ramapo Instrument Co., Inc., 8 First Street, Bloomingdale, N. J.

(Continued on page 50)

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MARKET WOOD PULP

FIRST QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

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Bleached Gw'd.	97.50/100.00	97.50/100.00			
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Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'sn.		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS

WEEK ENDED MARCH 7

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	8.00/7.50
3	$7.00/6.50	$7.50/7.25	$7.50/7.00	7.25/6.75
4	6.50/5.75	6.50/6.25	6.50/6.25	6.50/6.25
5	5.75/5.25	5.75/5.50	6.00/5.50	5.75/5.50
6	5.25/4.25	5.00/4.75	5.25/4.25	— /6.00
7	4.25/3.75	4.25/4.00	4.75/4.00	n.a.

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	March 13	March 13	March	March
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	14.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	19.00/ 20.00	17.50/ 18.00	18.00/ —	17.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	45.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	42.50/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	27.00/ 30.00
White Newsblanks	42.50/ 45.00	47.50/ 52.50	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	35.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	55.00/ 60.00	55.00/ —	60.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	18.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	40.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	8.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

Chemistry and Technology Of Papermaking

"Pulp and Paper Chemistry and Chemical Technology—Volume II Papermaking" by J. P. Casey, has been issued in a new edition which is a greatly revised and expanded version of the first edition. It is necessary to use the full name quoted above to indicate the scope of the book and not the publisher's condensed version "Pulp and Paper," since the book is limited to the chemical and other technical aspects of papermaking from a fundamental viewpoint. Chapter headings are; Fiber Preparation, Nature of Fiber Bonding, Sheet Formation, Water Usage and Disposal, Microbiology, Beater and Wet-End Additives, Filling and Loading, Internal Sizing, Surface Sizing, Wet Strength and Coloring. This book undoubtedly provides the most complete and authoritative technical discussion of these subjects available anywhere in one place. It is published by Interscience Publishers, Inc., and contains 1,250 pages plus indices. The book may be ordered from the Book Department, Lockwood Trade Journal Co., 49 West 45th Street, New York 36, N. Y. The price is $25.00.

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CHARLOTTE, NORTH CAROLINA

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Feb. 4	Feb. 11	Feb. 18	Feb. 25	Mar. 4
1961	91.5	91.9	88.5r	87.8r	91.5
	Feb. 6	Feb. 13	Feb. 20	Feb. 27	Mar. 5
1960	97.8	98.2	98.5	96.5	97.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.2	92.7
1961	87.8‡	89.9‡											

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	94.3	95.6	100.4	95.5	88.1	89.3	97.1	88.7
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.8	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Feb. 4	Feb. 11	Feb. 18	Feb. 25	Mar. 4
1961	90	90	87	89	89
	Feb. 6	Feb. 13	Feb. 20	Feb. 27	Mar. 5
1960	96	96	96	91	94

COMPARATIVE MONTHLY SUMMARIES

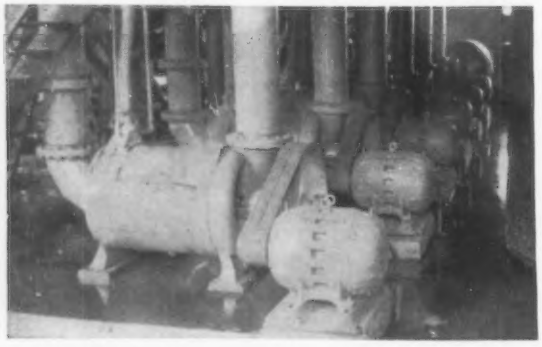
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961	88	89											

‡ Preliminary.

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING Feb. 25, 1961	WEEK ENDING Mar. 4, 1961	CUMULATIVE TO DATE Jan. 1, 1961 to March 4, 1961
% Activity	89%	89%	89%
Total	305,151	316,648	2,635,270
Containerboard—Domestic Use	148,557	159,947	1,315,149
Liner	96,418	108,021	869,722
Corrugating Material	46,912	47,895	405,326
Chip & Filler Board	5,227	4,031	40,101
Boxboard—Domestic Use	103,134	101,350	847,958
Folding	58,057	60,627	498,328
Set-Up	9,470	8,698	83,990
Special Food Board	35,607	32,025	265,640
Other Paperboard	53,460	55,351	472,163
Containerboard Type	23,292	26,862	218,606
Boxboard Type	30,168	28,489	253,557
Total Orders			
Received	314,694	355,465	
Unfilled End of Week	399,320	438,950	



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- The percentage of synthetic fiber in a felt is not the sole answer to better-performing felts—the careful selection and blending of synthetics and wool, plus the right felt design are also most important.
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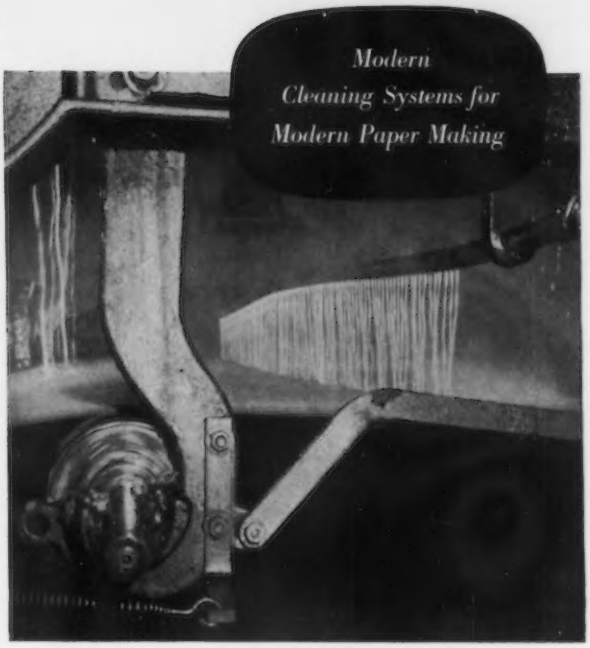

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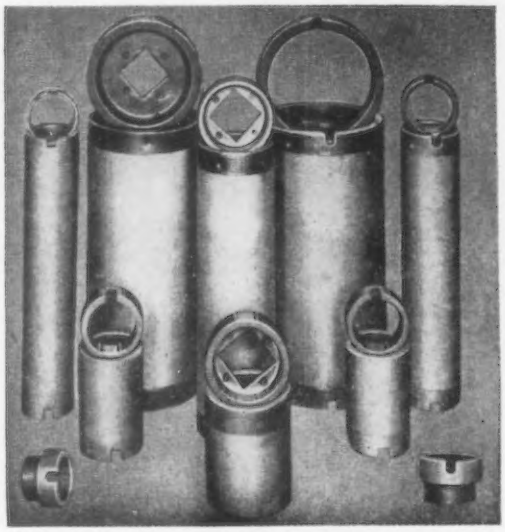

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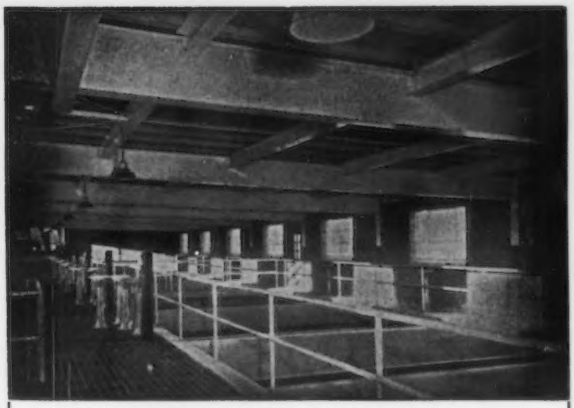

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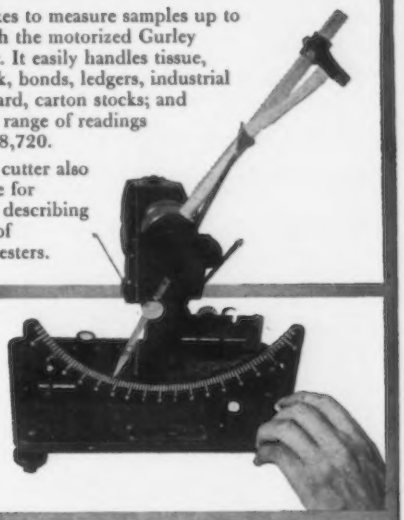

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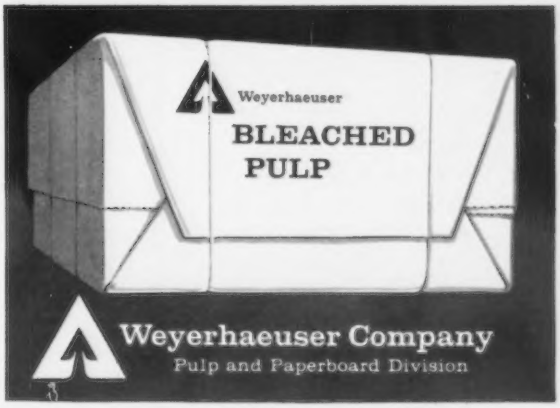

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M-20

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1—24" 1—30", 1—36" & 1—40" Kidder S.L. & 1—36" SLN

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		44"-Oswego
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57"-Oswego	50"-Dexter	32"-3Y

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1—84" Hamblet Duplex Heavy Board Sheeter
1—78" M&W Sheeter & Layboy
1—75" Hamblet Duplex—Erie Layboy—Overlapping Delivery
2—Becks—45 CSH—55 CCSH
1—Hansel Bag Machine—3 color printer
1—8-10 Nagel Ryan Bag machine—4 color printer
1—Simplex 7-24 Pouch Machine, E/eye
1—Multipath Bag Machine — 4 Color Holweg Printer
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3—Sheridans 50 x 24 44 x 20 36 x 18
Embossers 48" 55" Waldron & 50" Heavy Duty Hudson Sharp Tinter-Embosser
1—34" Waxer with 4-Ton Refrig. Unit
1—40" International Paper Box Machine Co's Sheet-Fed Carton Waxer

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2—3000# Downingtown 60" x 67" roll; like new
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1— 96" B-C 6 Roll—heavy duty
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1—115" B-C 7 roll
1—124" Downingtown 5 roll
1—124" Downingtown 6 roll
1—126" Farrell 9 roll—w.c. bearings

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1— 96" Murray 6 knife; A-F Brng

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1— 60" Egan Air Knife—New 1956
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1—M & W 72" Trim Yankee Fourdrinier
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1—104" face x 36" dia
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39— 46" face; Chrome plated
1—156" face w/gear and steam joint

28" Dia.:
3— 70" face w/gears & bearings
3— 73" face w/gears & bearings
3— 76" face w/gears & bearings
3— 77" face w/gears & bearings
2— 84" face
2— 84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face; 2—46" face
3— 70" face w/gears & bearings
11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
8— 75" face w/gears & bearings
26— 76" face; complete section
9— 76" face w/gears & bearings
2— 77" face w/gears & bearings
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2— 80" face
5— 84" face
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9— 92" face; complete section
1— 96" face
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1—120" face
1—160" face

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1— 72" Cameron Type 10; A-F Brng
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1— 72" Cameron Model 8-10
1— 82" Cameron 10-11; A-F Brng

42" Maximum Rewind Diameter
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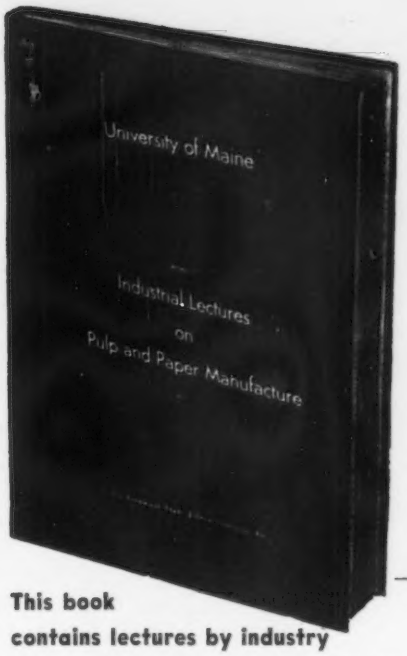

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